'68' MICRO JOURNAL

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Singapore S $ 8.00 Hong Kong H $20.00
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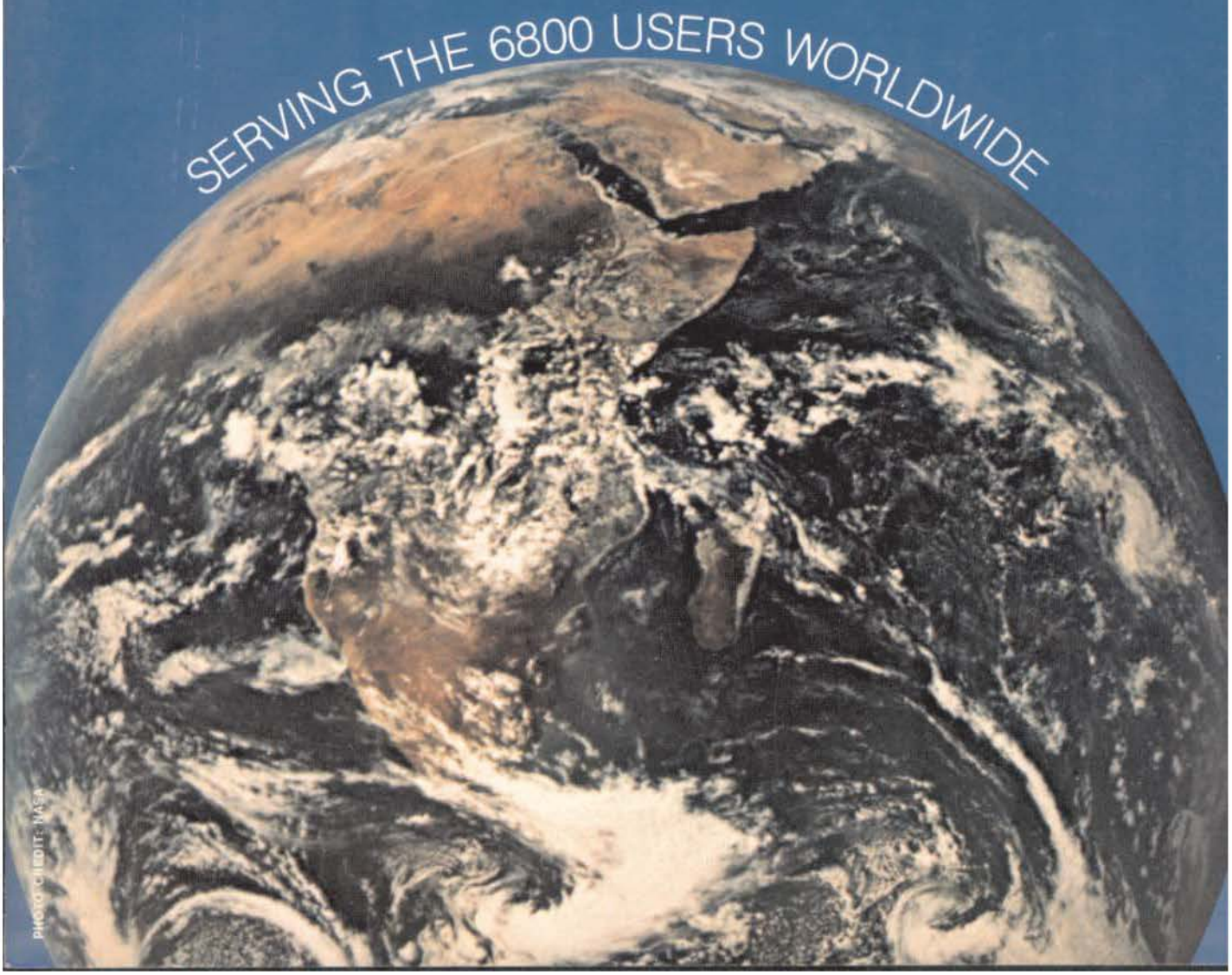
VOLUME I ISSUE 7 • Devoted to the 6800 User • September 1979

"Small Computers Doing Big Things."



SYSTEMS - SOLUTIONS

If you have a problem that can be solved by a computer—we have a systems solution.

- Two central processors with maximum RAM capacities of 56K and 384 K bytes
- Three types of disk drives with capacities of 175K, 1.2M and 16M bytes
- Two dot matrix printers with 80 and 132 line capacity
- A Selectric typewriter interface and a daisy wheel printer

Match these to your exact need, add one or more of our intelligent terminals and put together a system from one source with guaranteed compatibility in both software and hardware.

Southwest Technical Products systems give you unmatched power, speed and versatility. They are packaged in custom designed woodgrain finished cabinets. Factory service and support on the entire system and local service is available in many cities.

SWTP

SOUTHWEST TECHNICAL PRODUCTS CORPORATION
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SAN ANTONIO, TEXAS 78216 (512) 344-0241

'68' MICRO JOURNAL

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—ITEMS SUBMITTED FOR PUBLICATION—

(Letters to the Editor for Publication) All 'letters to the Editor' should be substantiated by facts. Opinions should be indicated as such. All letters must be signed. We are interested in receiving letters that will benefit or alert our readers. Praise as well as gripes is always good subject matter. Your name may be withheld upon request. If you have had a good experience with a 6800 vendor please put it in a letter. If the experience was bad put that in a letter also. Remember, if you tell us who they are then it is only fair that your name 'not' be withheld. This means that all letters published, of a critical nature, cannot have a name withheld. We will attempt to publish 'verbatim' letters that are composed using 'good taste.' We reserve the right to define (for '68' Micro) what constitutes 'good taste.'

(Articles and items submitted for publication) Please, always include your full name, address, and telephone number. Date and number all sheets. TYPE them if you can, poorly handwritten copy is sometimes the difference between go, no-go. All items should be on 8X11 inch, white paper. Most all art work will be reproduced photographically, this includes all listings, diagrams and other non-text material. All typewritten copy should be done with a NEW RIBBON. All hand drawn art should be black on white paper. Please no hand written code items over 50 bytes. Neatly typed copy will be directly reproduced. Column width should be 3¼ inches.

(Advertising) Any Classified: Maximum 20 words. All single letters and/or numbers will be considered one (1) word. No Commercial or Business Type Classified advertising. Classified ads will be published in our standard format. Classified ads $7.50 one time run, paid in advance.

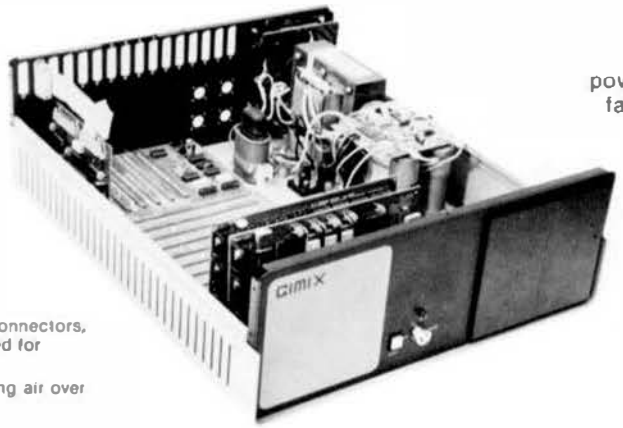
Commercial and/or Business advertisers please write or phone for current rate sheet and publication lag time.

WANT A CLASSY CHASSIS?

See GHOST Ad pages 37, 43

SYSTEM 68 by GIMIX

The Ultimate in SS 50 BUS Reliability



- A.C. fuse holder
- Removable A.C. cord
- Exhaust fan
- Punched for 16 D type date connectors, 4 video connectors and slotted for ribbon cables.
- Ventilation slots, direct cooling air over boards first.

Mainframe: includes chassis power supply switches, fan and mother board **$748.19**

16K Systems from $1294.29

Includes: Mainframe cabinet, mother board, power supply, fan, CPU, 16K static RAM, and choice of I/O card.

- Holds 2 5¼ disk drives (not included)
- GIMIX disk regulator cards (optional) mount on drives and wire to filler assembly board
- LED power indicator
- 3 position removable keyswitch (Off; Power On-Reset Off; Both On)
- Reset can be locked out
- Optional filler plates (when no drives are used)

CABINET

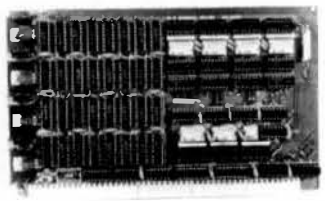
Heavyweight aluminum painted inside and out in grey and black baked enamel finish. Size: 18" widex21" deepx7" high.

MOTHER BOARD

Hardware reconfigurable to give you the utmost versatility for use with various SS 50 bus software packages. *Gold plated* pins to insure long lasting electrical contact for protection against corrosion. Fifteen 50 pin slots plus eight DIP-switch addressable 30 pin I/O slots configurable to 4 or 8 decoded addresses. The fully buffered I/O block is addressable by DIP-switch to any 32 or 64 byte boundary and can also be disabled. UD1 and UD2 of the 50 pin bus can be strapped to UD3 and UD4 of the 30 pin bus. A fully shielded, (.090" thick), double sided P.C. board with noise reducing ground lines on the bottom side that separate all date, address, and signal lines, and a full ground plane on the top side. A 14 position clamping terminal block for all power and other external connections eliminates soldering, crimping or forming of wires.

POWER SUPPLY

Designed to power a fully loaded system plus two 5¼" disk drives and keep running at constant voltage outputs even under adverse A.C. power input conditions. It consists of: *A 550 VA Ferro-resonant constant voltage transformer*, over 16 pounds of ***brute force*** custom designed for GIMIX to GIMIX' specs, an A.C. resonant capacitor, 3 D.C. filter capacitors, and GIMIX' unique filter assembly board that sits on top of the filter capacitors and includes individual fuses for each output, bleeder resistors, and a clamping terminal block for easy wiring connections. Almost a Quarter-farad of D.C. Filtering. *Brown-out and over-voltage insurance.* Supplies 8V at 25 Amps, +15 Volts at 5 Amps and −15 Volts at 5 Amps from A.C. input voltages ranging from 90 to 140 Volts.



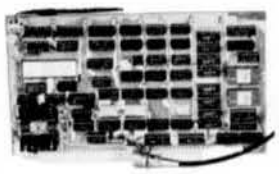
16K Static RAM Boards for the SS-50 Bus $298.13

- Gold bus connectors
- 4 separate 4K Blocks
- Individual Addressing, Write Protect, and Enable/Disable for each Block

As above with Sockets and Software control features **368.16**

All GIMIX memory boards are assembled, Burnt-in for 2 weeks, and tested at 2 MHz

SS 50 BUS 80 X 24 VIDEO BOARD



Deluxe Version $458.76

Other Video Boards from $198.71

With hardware scrolling, x-y addressable cursor and multiple character generators. It includes a TMS 2716 EPROM that contains a full 128 upper and lower case ASCII character set with true descenders, plus a socket for another TMS 2716 for an optional 128 character set, plus 2K of RAM for user-defined programmable character sets. This gives the user the ability to create his own hieroglyphics, alphabet, graphic elements, etc., and store them on PROM, disk, or tape. The user can choose and intermix 384 different characters from any or all of the character generators and display up to 256 at one time, normally or inversely, and at full or half intensity, at any location on the screen. Contiguous 8x10 character cells permit solid lines and connecting patterns with user definable graphic elements.

It is addressable to any 2K boundary. GHOSTable addressing allows multiple boards at the same address, making it ideal for multi-user applications. The available software includes a GMXBUG video based 3K ROM monitor, stand alone driver routines, and a program to create user defined characters.

8K PROM BOARD $98.34

- Holds eight 2708 or 2708-compatible ROMS.
- DIP-switch addressable to any 8K boundary
- Gold Bus Connectors

2708s $7.90 each

Add $10. handling charge on orders under $200.

Phone, write or see your dealer for complete brochure and price list.

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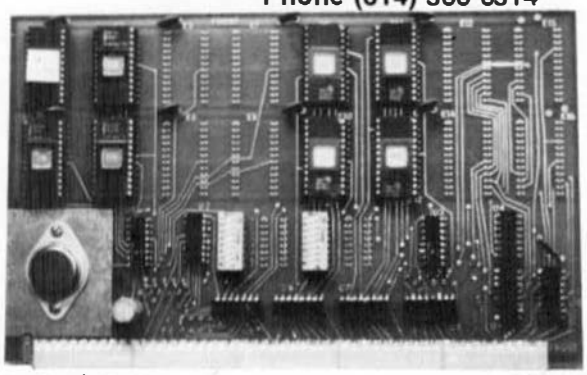
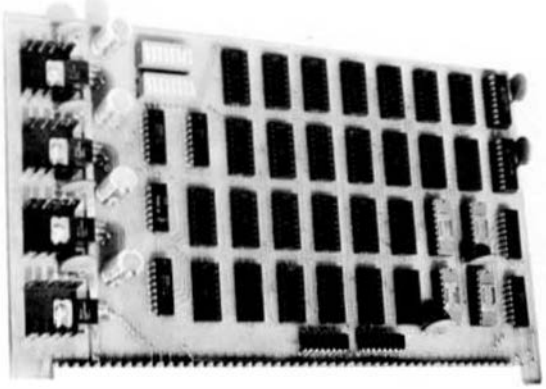
The Company that delivers.

Quality Electronic products since 1975.



DSD P/R-32K $27.00

32K or 16K EPROM & RAM memory card. 2716 2K x 8 or 2758 1K x 8 5V only EPROMS. TMS 4016 2K x 8 or MK 4118 1K x 8 5V RAMS. Up to 4 independent addressed 8K blocks. Dip switch or jumper selected. Size 9" x 5½"



DSD 2114-16K $27.00

Full Static 16K Ram memory card designed to use the 2114 or TMS 4045 1024 x 4 Static Ram. The card has two independent addressed 8K memory blocks. Card size 9" x 5½". Power requirements 7-8V unreg. @ 3.5A.

DSD U P 8255M $14.00

Universal parallel interface card with wire wrap area using INTEL'S 8255 parallel peripheral interface chip. 24 programmable I/O lines. (Three 8 bit Ports or Two 8 bit Ports with hand-shaking) Card size 5½" x 5" Standard SS-50 30 pin I/O BUS. 5V only.

Cards are bare with data and edge connector. Ohio residents add 4½% sales tax.

6847 Color Graphic card in design

HELP

This column is for those who need help. PLEASE NOTE; this column is not intended to conflict with our classified section (which gets quick results) but is for those who need HELP. Please type your request similar to this; width 3 1/4 inches and not too long. A dark ribbon and white paper. No strikeovers please, be neat, it may get you the HELP needed.

To the reader who can help, please correspond direct with the person requesting help.

--

Needed information on the TVT-6 and SWTPC 6800 combo. Need to know about hardware and software for this combination. Rochester Payne, RD 3 Mayne Ave., Stanhope, NJ, 07874.

--

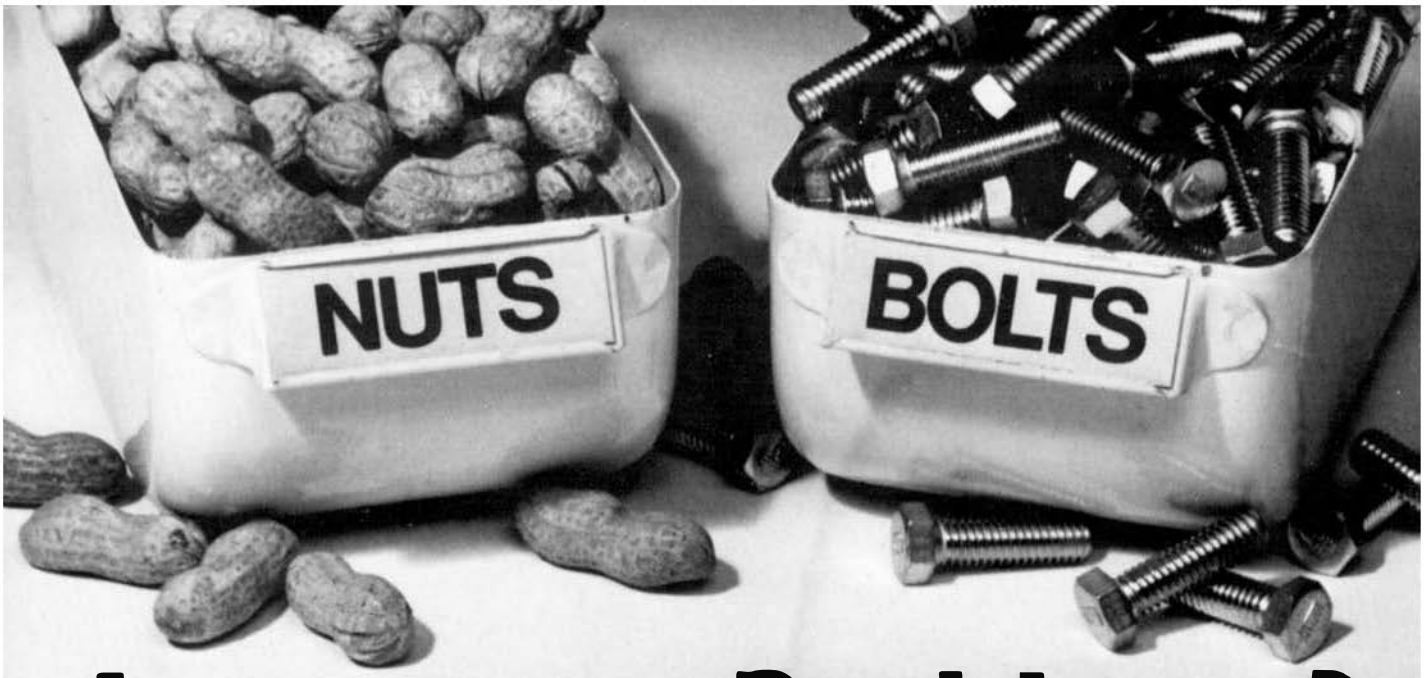
I am interested in buying a ready made computer using the 6809 microprocessor. I would like something like the Microchroma 68 for the 6809. Robert Morton, 519 Meldrum 314, Fort Collins, CO, 80521.

Ed's Note: Robert this should have been a classified ad, however, I am anxious to see you get started so will run in the help column, rather than hold you up. However, personally and professionally I would suggest you try one of the proven 6809 computers advertised in 68 Micro Journal. Good hunting.

--

Need a source for math subroutines. Such as square root, trig, multiprecision divide and multiply. Everyone is prolific with the BASICs but nothing advanced in any publication I can find. Thank you, Jack Biggs, POB 123, Chula Vista, CA 92012.

Ed's Note: Jack try TSC (ad on page 1) they have a math package and it comes with complete assembled source. Now that you read 68 Micro keep up with Crunchers Corner, by Dr. Jack Bryant, it gets to the heart of math routines. Should be just what you need.



Inventory Problems?

Are you having trouble keeping the right nuts and bolts in stock? Since even a simple mistake can cost you time and money, a good inventory system should do more than just count parts. It should tell you exactly what you need, when you need it, where to get it, and how much it will cost.

The MSI Inventory System Seven enables you to maintain a versatile data base for controlling inventory. It lists part number, description, quantity on hand, vendor, cost, selling price, optional pricing, usage levels for previous month, present month, and year-to-date, and much more.

When quantity on hand items reach minimum levels, the System Seven compiles an automatic reorder list. This list can be generated by specific vendor as well as a complete listing of all materials to be ordered.

In addition to the item listing, the Inventory System Seven "bill of materials" provides you with a complete inventory of items used in the manufacture of subassemblies and complete products. It also contains other cost items such as labor costs, total raw materials costs, and miscellaneous costs.

The MSI Inventory System Seven is built around the versatile MSI 6800A Computer with 56K of RAM. An integral dual mini-floppy memory gives you an additional 630K of memory and makes inventory control fast and efficient. The System Seven will interface with any industry standard CRT, and you have the option of both a "daisy wheel" word processor for high quality document preparation and a dot matrix printer for high speed production.

The System Seven can be expanded to handle all your data processing needs or you can select one of nine other MSI systems now available for business, industrial, scientific, educational, and personal applications.

If you need more than just a nuts and bolts inventory system, we have more information about how the Inventory System Seven can solve your problems economically.

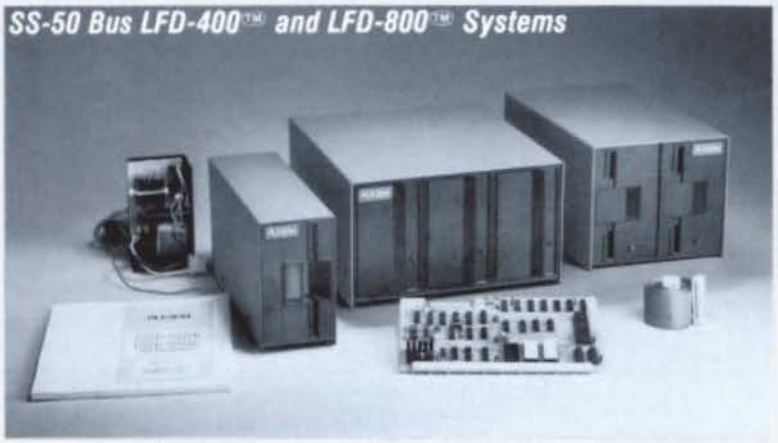
MSI Inventory System Seven

MSI

Midwest Scientific

220 W. Cedar, Olathe, Kansas 66061, (913) 764-3273
TWX 910 749 6403 (MSI OLAT), TELEX 42525 (MSI A OLAT)

Welcome to Percom's Wide World



Each LFD mini-disk storage system includes:

- drives with integral power supplies in an enamel-finished enclosure
- a controller/interface with ROM operating system plus extra ROM capacity and 1K of RAM
- an interconnecting cable
- a comprehensive 80-page users manual

Low-Cost Mini-Disk Storage in the Size You Want.

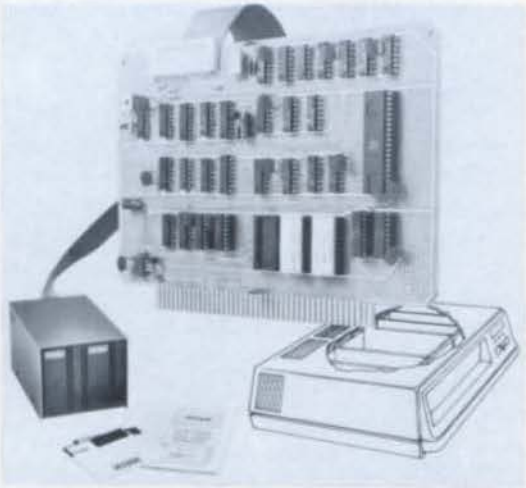
Percom LFD mini-disk drive systems are supplied complete and ready to plug in the moment they arrive. You don't even have to buy extra memory. Moreover, software support ranges from assembly language program development aids to high-speed disk operating systems and business application programs.

The LFD-400™ and -400EX™ systems and the LFD-800™ and -800EX™ systems are available in 1-, 2- and 3-drive configurations. The -400, -400EX drives store 102K bytes of formatted data on 40-track disks, and data may be stored on either surface of a disk. The -800, -800EX drives store 200K bytes of formatted data on 77-track disks.

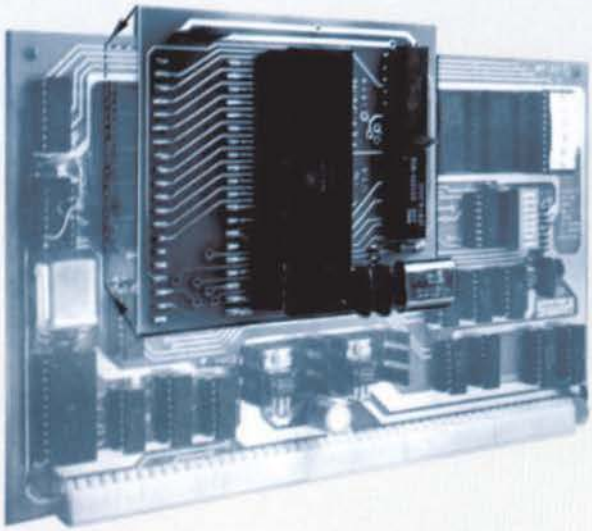
The LFD-1000™ systems (not pictured) have dual-drive units which store 800K bytes on-line. The LFD-1000™ controller accommodates two drive systems so that a user may have as much as 1.6M bytes on-line.

Mini-disk storage system prices:

MODEL	1-DRIVE SYSTEM	2-DRIVE SYSTEM	3-DRIVE SYSTEM
For the SS-50 Bus:			
LFD-400™	$ 599.95	$ 999.95	$1399.95
LFD-800™	895.95	1549.95	2195.95
For the EXORciser® Bus:			
LFD-400EX™	$ 649.95	$1049.95	$1449.95
LFD-800EX™	945.95	1599.95	2245.95
LFD-1000™	(dual) $2495.00	(quad) $4950.00	—



EXORciser® Bus LFD-400EX,™ -800EX™ Systems



Upgrade to 6809 Computing Power. Only $69.95

Although designed with the SWTP 6800 owner in mind, this upgrade adapter may also be used with most other 6800 and 6802 MPUs. The adapter is supplied assembled and tested, and includes the 6809 IC, a crystal, other essential components and user instructions. Restore your original system by merely unplugging the adapter and a wire-jumpered DIP header, and re-inserting the original components. Also available for your upgraded system is PSYMON™ (Percom SYstem MONitor), the operating system for the Percom 6809 single-board computer. PSYMON™ on 2716 ROM costs only $69.95. On diskette (source and object files), only $29.95.

Data Terminal & Two-Cassette Interface — the CIS-30+

- Interface to data terminal and two cassette recorders with a unit only 1/10 the size of SWTP's AC-30.
- Select 30, 60 or 120 bytes per second cassette interfacing. 300, 600 or 1200 baud data terminal interfacing.
- Optional mod kits make CIS-30+ work with any microcomputer. (For MITS 680b, ask for Tech Memo TM-CIS-30+-09.)
- KC Standard/Bi-Phase-M (double frequency) cassette data encoding. Dependable self-clocking operation.
- Ordinary functions may be accomplished with 6800 Mikbug® monitor.

Prices: Kit, $79.95; Assembled, $99.95. Prices include a comprehensive instruction manual. Also available: Test Cassette, Remote Control Kit (for program control of recorders), IC Socket Kit, MITS 680b mod documentation and Universal Adapter Kit (converts CIS-30+ for use with any computer).

of 6800 Microcomputing.

6800/6809 SOFTWARE

System Software

6800 Symbolic Assembler — Specify assembly options at time of assembly with this symbolic assembler. Source listing on diskette $29.95

Super BASIC — a 12K extended random access disk BASIC for the 6800 and 6809. Supports 44 commands and 31 functions. Interprets programs written in both SWTP 8K BASIC (versions 2.0, 2.2 & 2.3) and Super BASIC. Features 9-digit BCD arithmetic, Print Using and Linput commands, and much more. Price $49.95

TOUCHUP™ — Modifies TSC's Text Editor and Text Processor for Percom mini-disk drive operation. Supplied on diskette complete with source listing $17.95

Operating Systems

INDEX™ — This easy-to-use disk-operating and file management system for 6800 microcomputers is fast. I/O devices are serviced by interrupt request. INDEX™ accesses peripherals the same as disk files — new devices may be added without changing the operating system. Other features: unlimited number of DOS commands may be added • over 60 system entry points • display only those files at or above user-specified file activity level • versions available for SWTP MF-68, Smoke's BFD-68 and Motorola's EXORciser*. Price $99.95

MINIDOS-PLUSX™ — An extension of the original MINIDOS™ for LFD-400™ mini-disk systems, MINIDOS-PLUSX™ manipulates files by six-character names. Supports up to 31 files. Resident commands include Initialize, Save, Allocate, Load, Files (directory list), Rename and Delete. Supplied on 2708 ROM with a minidiskette that includes transient utilities such as Copy, Backup, Create, Pack and Print Directory. Price ..... $34.95.

PSYMON™ — Percom SYstem MONitor for the Percom single-board/SS-50-bus-compatible 6809 computer accommodates user's application programs with any mix of peripherals **without** modifying programs. PSYMON™ also features character echoing to devices other than the communicating device, sophisticated register and memory dump routines and more. Price (on 2716 ROM) ..... $69.95.

WINDEX™ — Described in detail elsewhere on this page.

Business Programs

General Ledger — For 6800/6809 computers using Percom LFD mini-disk storage systems. Requires little or no knowledge of bookkeeping because the operator is prompted with non-technical questions during data entry. General Ledger updates account balances immediately — in real time, and will print financial statements immediately after journal entries. User selects and assigns own account numbers; tailors financial statements to firm's particular needs. Provides audit trail. Runs under Percom Super BASIC. Requires 24K bytes of RAM. Supplied on minidiskette with a comprehensive users manual. Price ..... $199.95.

FINDER™ — This general purpose data base manager is written in Percom Super BASIC. Works with 6800/6809 computers using Percom LFD-400™ mini-disk drive storage systems. FINDER™ allows user to define and access records using his own terminology — customize file structures to specific needs. Basic commands are New, Change, Delete, Find and Pack. Add up to three user-defined commands. FINDER plus Super BASIC require 24K bytes of RAM. Supplied on minidiskette with a users manual. Price $99.95

Mailing List Processor — Powerful search, sort, create and update capability plus ability to store 700 addresses per minidiskette make this list processor efficient and easy to use. Runs under Percom Super BASIC. Requires 24K bytes of RAM. Supplied on minidiskette with a users manual. Price $99.95.

From the Software Works

Development and debugging programs for 6800 µCs on diskette:

Disassembler/Source Generator	$30.95
Relocating Disassembler/Segmented Text Gen	$40.95
Disassembler/Trace	$26.95
Support Relocator Program	$25.95
Relocating Assembler/Linking Loader	$55.95
SmithBUG** (2716 EPROM)	$70.00

½-Price Special on Hemenway Software!

CP/68‡ disk operating system	$ 49.97
STRUBAL+‡ compiler	$124.97
EDIT68 text editor	$ 19.97
MACRO-Relocating Assembler	$ 39.97
Linkage Editor (LNKEDT68)	$ 24.97
Cross Reference utility	$ 14.97

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* trademark of Motorola Corporation
‡Trademark of Hemenway Associates Company
**SmithBUG is a trademark of the Software Works Company

And 'looking into' is just what you do with the Electric Window™ as you peer right into memory space where characters are being input and manipulated. Display is memory-resident, programmable and generates up to 24 80-character lines.

Other features include:

- standard character generator plus provision for optional special character generator
- dual intensity, high-lighting alphanumeric display
- scrolling by a programmable register • programmable display positioning
- programmable interlaced or non-interlaced scan
- descenders on lower case letters • users manual with application instructions and listing of WINDEX™ driver.

The Electric Window.™ Worth Looking Into. $249.95

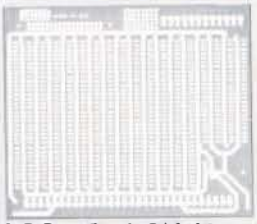
WINDEX™ is a fast video display driver program for the Electric Window™. WINDEX™ also features: program and keyboard control of character generators • displayable control characters — under program control • automatic scrolling • a driver routine for the parallel input keyboard feature of the Percom 6809 Single-Board Computer, the SBC/9™ • auto-linking to PSYMON™, the ROM operating system for the SBC/9™ • Prices: ROM version: $39.95; LFD-400™ compatible diskette (source and object files): $29.95.

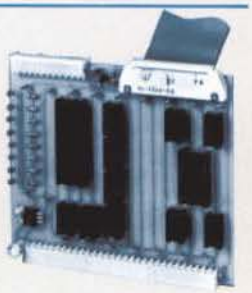
PDQ from PDC!

In the product development queue and available soon: **the SBC/9™** (Single-Board-Computer/6809) — stands alone as a control computer, but also compatible with the SS-50 bus for use as an MPU card. Includes PSYMON™ (Percom SYstem MONitor) in a 1K ROM and provides for additional 1K of ROM. Also includes 1K of RAM. Features: Super Port — provision for multi-address, 8-bit bidirectional data lines • an intelligent data bus for multi-level data bus decoding • an on-board 110-baud to 19.2 kbaud clock generator • extended address capability — to 16 megabytes — without disabling baud clock or adding hardware. And much more. Supplied with PSYMON™ and comprehensive users manual. Price ..... $199.95.

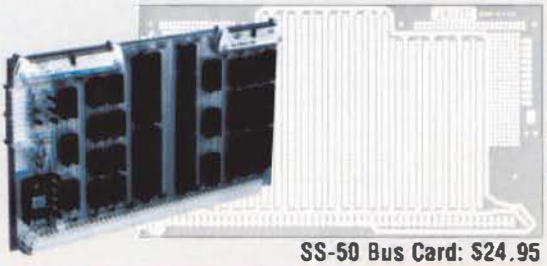
Full Feature Prototyping PC Boards

All of the features needed for rapid, straightforward circuit prototyping. Use 14-, 16-, 24- and 40-pin DIP sockets • SS-50 bus card accommodates 34- and 50-pin ribbon connectors on top edge, 10-pin Molex connector on side edge • I/O card accommodates 34-pin ribbon connector and 12-pin Molex on top edge





I/O Bus Card: $14.95



SS-50 Bus Card: $24.95

- I/O card is 1-¼ inches higher than SWTP I/O card • interdigitated power conductors • contacts for power regulators and distributed capacitance bypassing • use wire wrap, wiring pencil or solder wiring • tin-lead plating over 2-oz copper conductors wets quickly, solders easily • FR4-G10 epoxy-glass substrate.

To place an order or request additional literature call toll-free 1-800-527-1592. For technical information call (214) 272-3421. Orders may be paid by check, money order, COD or charged to a VISA or Master Charge account. Texas residents must add 5% sales tax.

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PERCOM

PERCOM DATA COMPANY, INC.
211 N. KIRBY GARLAND, TEXAS 75042
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SCOPE (SSB DOS Backapace)

Dan Johnson
Solar Computer Sys. Corp.
7655 SW Cedarcrest St.
Portland, OR 97223

If you are running a Smoke Signal Broadcasting disk system with a CRT terminal for your console device, you may prefer like me to have the rubout key backspace the cursor istead of echo the deleted character (the format for hard copy terminals). To that end here is one of my handy-dandy little patches. Note: line 20 in the listing changes the "DELETE" character from a control/D to a rubout ($7F), if however you happen to still be using the MIKBUG monitor this won't work for you since the MIKBUG character input routine will never return with a $7F, (which is the way you probably want it if you are reading paper tape on a Teletype).

You can enter this code with the monitor memory change command, then return to the operating system via the warm start entry point ($7283) and check it out. If your satisfied with how it works; SAVE it and APPEND it to the DOS, or you might prefer to save this code with a transfer address of $7283 (the warm start entry point) then use the INSTAL command to make a command file out of it. If you save it in a file named SCOPE.$ then any time after booting the system up you can configure the terminal to backspace by typing: SCOPE<RET>

```
MAL/6800 1.2: 0000   SCOPE                    SSB DOS68 PATCH TO BACKSPACE CRT FOR DEL
17-MAY-79 13:10:45; Page 1; Form 1

                     2:          NAM     SCOPE
                     4:          WITH    WI=80
                     5: ********************************************************:
                     6: *PATCH SSB DOS68 OPERATING SYSTEM TO BACKSPACE CURSOR
                     7: *        Dan Johnson
                     8: *        Solar Computer Systems Corp.
                     9: *        7655 SW Cedarcrest St.
                    10: *        Portland, OR  97223
                    11: ********************************************************:
                    12:
  74A6               13: LINEIN   EQU     $74A6
  74B2               14: LO       EQU     $74B2
  7503               15: ECHO     EQU     $7503
  750F               16: ECHO1    EQU     $750F
                    17:
                    18: *CHANGE DELETE CHARACTER FROM CNTRL/D TO RUBOUT
  74BA               19:          ORG     $74BA
74BA 7F             20:          FCB     $7F              RUBOUT
                    21:
  74DE               22:          ORG     $74DE
74DE 5D             23: L1       TST B                    BEGINNING OF LINE?
74DF 27C5           24:          BEQ     LINEIN
74E1 8D0C           25:          BSR     RUB1             IF NOT..RUBOUT A CHAR.
74E3 5A             26:          DEC B                    DEC CHARACTER CNT
74E4 09             27:          DEX                      BACKUP LINE POINTER
74E5 A601           28:          LDA A   1,X              SEE IF IT WAS CNTRL CHAR
74E7 811F           29:          CMP A   #$1F
74E9 2202           30:          BHI     DONE             IF NOT...WE'RE DONE
74EB 8D02           31:          BSR     RUB1             ELSE RUBOUT THE "^"
74ED 20C3           32: DONE     BRA     LO               END OF RUBOUT ROUTINE
                    33:
74EF 8608           34: RUB1     LDA A   #$8              BACKSPACE
74F1 8D1C           35:          BSR     ECHO1
74F3 8620           36:          LDA A   #$20             SPACE
74F5 8D18           37:          BSR     ECHO1
```

```
74F7 8608          38:          LDA A    #$8              BACKSPACE
74F9 2014          39:          BRA      ECHO1            & RTS
                   40:
  0008             41:          RPT      ECHO-*
74FB 01            42:          NOP                       FILL UNUSED SPACE
74FC 01
74FD 01
74FE 01
74FF 01
7500 01
7501 01
7502 01
                   43:
                   44:          END

MAL/6800 1.2: 7503   SCOPE                  SSB DOS68 PATCH TO BACKSPACE CRT FOR
17-MAY-79 13:10:45; Page 2; Form 1

Symbols Sorted by NAME:

 DONE/74ED       ECHO/7503       ECHO1/750F      LO/74B2         *L1/74DE
 LINEIN/74A6     RUB1/74EF

Symbols Sorted by Value:

 LINEIN/74A6     LO/74B2         *L1/74DE        DONE/74ED       RUB1/74EF
 ECHO/7503       ECHO1/750F

7 Symbols.
```

DISSAMBLE/SOURCE CODE GEN.

(Flex)

Robert C. Boyd
Woodland Ave., RFD 2
Kennebunken, ME 04046

Disassembler/Source Code Generator for Mini-Flex

Several years ago while working with a cassette-based M6800 system, I purchased a Disassembler/Source Generator from Ed Smith's Software Works. This program produces source code on cassette tape or Smoke Signal Disk by disassembling an object program located anywhere in memory. The source file may be edited by either SWTPCo or TSC editors, and then re-assembled. It has proven to be one of the most valuable programs in my library.

Earlier this year my system was upgraded to dual mini-floppy drives and Flex; a crt serves as operators console and a Teletype

is connected to Port 7. I soon felt the need for a disassembler which would create source files under Flex, and which would print on my Teletype. Fortunately, the documentation supplied with the software listed the jump addresses for printer and disk subroutines, and mentions that the B and X registers must be preserved. Armed with that information and a Flex Advanced Programmers Guide, it was a simple task to write the required routines; the result is shown in the program listing called GEN_IO.

You may modify your copy of the disassembler to work with Flex by performing the following steps:

1. Enter the GEN_IO source code with your editor and then assemble it.
2. Load the disassembler into memory.
3. Load GEN_IO into memory.
4. Change the jump addresses within the disassembler to referance the entry points in GEN_IO.
5. Save the combined disassembler/GEN_IO as one program.

The revised disassembler will prompt for drive number and name; an extension of TXT will be the default. Always enter the drive number as a default to the working-drive doesn't always work.

Ed Smith currently advertises a Relocatable Disassembler and Segmented Source Text Generator (MS68RS-D) at $40.95 on mini-floppy; I assume that it is a revised version of what I had purchased earlier. If you don't have a copy in your library, I urge you to send in an order to Ed Smith, PO Box 339, Redondo Beach, CA 90277.

```
GEN-IO                          TSC MNEMONIC ASSEMBLER    PAGE 1

    4  7115          INBUFF  EQU     $7115
    5  7118          PSTRNG  EQU     $7118
    6  7127          GETFIL  EQU     $7127
    7  712D          SETEXT  EQU     $712D
    8  713C          RPTERR  EQU     $713C
```

```
 9  7806                FMS     EQU   $7806
10  801C                PORT    EQU   $801C
11  4000                        ORG   $4000
12  4000                FCB     RMB   192
13  40C0 04                     FCB   4
14  40C1 45             PRMPT   FCC   'ENTER DRIVE AND FILE-NAME:
15  40DC 04                     FCB   4
16  40DD 46             ERR1    FCC   'FORMAT ERROR'
17  40E9 04                     FCB   4
18  40EA 46             OPN     FCC   'FILE OPENED'
19  40F5 04                     FCB   4
20  40F6                SAVEX   RMB   2
21  40F8 FF 40 F6       OUT     STX   SAVEX       OUTPUT CHARACTER TO
22  40FB 37                     PSH B             TELETYPE AT PORT 7
23  40FC CE 80 1C               LDX   #PORT
24  40FF E6 00          LOOP    LDA B 0,X
25  4101 C4 02                  AND B #02
26  4103 27 FA                  BEQ   LOOP
27  4105 A7 01                  STA A 1,X
28  4107 FE 40 F6               LDX   SAVEX
29  410A 33                     PUL B
30  410B 39                     RTS
31  410C 86 13          INIT    LDA A #$13        INITIALIZE ACIA 7
32  410E B7 80 1C               STA A PORT
33  4111 86 11                  LDA A #$11
34  4113 B7 80 1C               STA A PORT
35  4116 39                     RTS
36  4117 FF 40 F6       FOPEN   STX   SAVEX       SAVE INDEX
37  411A 37                     PSH B             AND B REG
38  411B CE 40 C1               LDX   #PRMPT      PROMPT FOR INPUT
39  411G BD 71 18               JSR   PSTRNG
40  4121 BD 71 15               JSR   INBUFF      ACCEPT ENTRY
41  4124 CE 40 00               LDX   #FCB        POINT TO FCB
42  4127 BD 71 27               JSR   GETFIL      PARSE INTO FCB
43  412A 25 3C                  BCS   ERROR1      FORMAT ERROR?
44  412C 86 01                  LDA A #1          TEXT EXTENSION
45  412E A7 00                  STA A 0,X
46  4130 BD 71 2D               JSR   SETEXT      SET THE EXTENSION
47  4133 CE 40 00               LDX   #FCB        POINT TO FCB
48  4136 86 02                  LDA A #2          OPEN FOR WRITE
49  4138 A7 00                  STA A 0,X
50  413A BD 78 06               JSR   FMS         DO THE OPEN
51  413D 26 30                  BNE   ERROR2
52  413F CE 40 EA               LDX   #OPN
53  4142 BD 71 18               JSR   PSTRNG
54  4145 FE 40 F6               LDX   SAVEX       RESTORE INDEX
55  4148 33                     PUL B             AND B REG
56  4149 39                     RTS
57  414A 37             FWRT    PSH B             SAVE B
58  414B FF 40 F6               STX   SAVEX       AND INDEX
59  414E CE 40 00               LDX   #FCB        POINT TO FCB
60  4151 BD 78 06               JSR   FMS         WRITE CHARACTER IN A
61  4154 26 19                  BNE   ERROR2      ERROR?
62  4156 FE 40 F6               LDX   SAVEX       RESTORE INDEX
63  4159 33                     PUL B             AND B REG
64  415A 39                     RTS
65  415B CE 40 00       FCLOS   LDX   #FCB        POINT TO FCB
66  415E 86 04                  LDA A #4
67  4160 A7 00                  STA A 0,X         STORE CLOSE CODE
68  4162 BD 78 06               JSR   FMS         AND DO THE CLOSE
69  4165 26 08                  BNE   ERROR2      ERROR?
```

```
 70  4167 39                    RTS
 71  4168 CE 40 DD  ERROR1      LDX     #ERR1       FORMAT
 72  416B BD 71 18              JSR     PSTRNG      ERROR
 73  416E 39                    RTS
 74  416F A6 01     ERROR2      LDA A   1,X         GET ERROR CODE
 75  4171 BD 71 3C              JSR     RPTERR      AND REPORT IT
 76  4174 39                    RTS
 77                             END

NO ERROR(S) DETECTED

 SYMBOL TABLE:

ERR1    40DD    ERROR1  4168    ERROR2  416F    FCB     4000    FCLOS   415B
FMS     7805    FOPEN   4117    FWRT    414A    GETFIL  7127    INBUFF  7115
INIT    410C    LOOP    40FF    OPN     40EA    OUT     40FB    PORT    801C
PRMPT   40C1    PSTRNG  7118    RPTERR  713C    SAVEX   40F6    SETEXT  712D
```

* BACK ISSUE INFO *

There is an increasing demand for back issues of 68 Micro Journal. Issues 1 and 4 are completely depleted and the others are going fast. Most all who subscribe, once they see us, want the back issues. I hope to have returned some unpaid for back issues from two computer stores that went bankrupt. If these do become available, there will be less than 150 copies of each issue. I will let you know if and when they are available.

Our policy has been to reply that when we reprint the back issues a notice will be posted in 68 Micro Journal. Several considerations require that we secure your, the readers, comments concerning reprinting back issues.

Some have requested a single volumn containing all articles run in the first 6 or 7 issues. This would be far less expensive, for those desiring back issues, than purchasing each individual copy. Postage and printing cost have increased drastically since our first issue. This means that reruns will cost more than the current cover price. This is increasing to $2.50 with this issue. The exact selling price cannot be determined until a decision is made as to the final format of a reprint. However, the combined issue (all previous articles) will be far less expensive, than say buying 3 or 4 back issues.

I have from the beginning determined that the readers will decide what we do. After all it is you who allowed us to grow at the rate we have. For too long we (the 6800 users) were without a voice or sometimes even a mention, in the other computer magazines. If you receive some of the other magazines you know what I mean. I have tried to fill that void and neglect. So it is with these thoughts in mind that I put it to you to decide.

I hope that if you elect to accept a combined issue (ALL back articles), that it can be sold for less than $5.00 per copy. However, the final price will be determined by the printing market conditions, at the time of printing and distribution.

My only desire is to do what a majority, of those responding, want concerning this matter. I can promise you that the back issue articles will be reprinted, in one format or another.

Please feel free to call or write concerning the above. I have directed my staff that all correspondence concerning this is to go across my desk. Profit (there will be one, of course) derived from this reprint, in either form, is not my major concern. I simply want to do what you, the readers of 68 Micro Journal, want me to do. The results will be published in the near future. Please let me know soon.

Don Williams Sr.
Publisher

SWTPC 6809 BOARD

A 68 Micro Journal Lab Review

In February of this year SWTPC announced that they had fired up their new 6809 board and it ran, the first time, without any problems. In July of this year we received our review 6809 board from SWTPC. Also, it fired up and ran without any problems. This then is a review of the SWTPC 6809 CPU board, not the 6809.

We will start by telling you that the board (ours was factory assembled) is of excellent quality. The first thing noticed was that SWTPC used a solder-masked board, for the folks 'rolling their own' this is a great help. The board installs on the 50 pin bus, as the 6800 board did.

Some apparent changes are noticed right off. For one the reset is not on the bus but instead is run direct to the card from the reset switch. This frees up a bus line; M.RST (manual reset) bus line, on the motherboard, has been renamed M.RDY (memory ready). Other changes are dual usage of some lines, depending upon switch jumpers on the CPU board. UD1 and UD2 lines are now dedicated and not available for user defined application. There are other bus changes, please note the chart at the end of this article.

The monitor for the 6809 is 2716 EPROM pinout compatible. It is named 'SBUG-E'(tm). Provisions are allowed and the address locations made known in the manual for using the system at 1 Mz, restricted to the MF-68 disk system or tape, provided you can burn a 2716 to replace the SBUG-E(tm) monitor ROM, this leave I/O at $8000. If you use the DMAF1 or DMAF2 8" disk systems, it will require that you modify your present motherboard and 8" controller board. Complete instructions are included for these revisions, for both the older as well as the newer motherboard and disk controller board. The manual for the monitor includes a set of 'routine addresses' for those adapting existing 6800 software to 6809 operation. Unfortunatly some needed routines are not listed, such as were found in SWTBUG(tm), e.g. - in and out 2 and 4 hex, as well as some lesser uaed functions. This appears to be a result of the stated intention by SWTPC to upgrade on occasions. As a result these routines would possibly not have the same addresses, from revision to revision.

The monitor contains some useful new routines, such as: Alter the A register, Alter the B register, Alter the CC register, Alter Direct Page register, Alter Program Counter, Alter User Stack, Alter X register and Alter Y register. Disk boots for both 5 and 8 inch disk systems. Examine memory - this dumps 16 bytes to a line and then dumps the ASCII also of the same line, to the CRT or output device. Memory Test, an efficient memory test. It would take 90 hours (slightly less) to completely test the memory of a 56K machine. Complete error reporting is accomplished by the memory test. Display Stack, usable as long as the stack has not been moved from the monitor assignment. In addition the familiar monitor routines are included: Set Breakpoint (maximum 5), Remove Breakpoints, Load and Punch MIKBUG(tm) formatted tapes, G for continue execution and Display Register - this displays the registers in the following format:

```
SP=hhhh US=hhhh DP=hh IX=hhhh IY=hhhh
PC=hhhh A=hh B=hh CC: E F H I N Z V C
```

The 6809 CPU board can be purchased to run at either 1 or 2 Mz. Our review is based on the 1mz board. Baud rates and the system clocks are Xtal controlled.

There are 4 EPROM sockets on the board. The monitor resides at one of these locations. The other three are for the present dedicated to, yet to be announced applications. They are all 2716 compatible.

The entire memory allocation of the machine, except for a small portion at the top, is managed by a system called 'Dynamic Address Translation'. The Dynamic Address Translator (DAT) assigns 'logical' addresses for 'physical' addresses. This means that memory boards can be strapped for any block of memory address space and the DAT will handle memory assignments as if all were contiguously strapped (provided no two are strapped for the same memory address block). This of course would cause conflicts unresolvable by the system. The manual states that this (DAT) is an

integral part of a system design for multitasking and multiuser environments. The translator is a 4 bit wide 16 position high speed RAM, physically and logically addressed at $FFF0-$FFFF. Logical assignments are allocated in 4K blocks.

Memory mapping for the unmodified configurations is: from $DFFF down (logically) to $D000 for a 4K system (not many of these). From $DFFF to $C000 for a 8K system, and so on. Remember these are 'logical' addresses. On the modified motherboard system the allocations is as follows: I/O is relocated from $8000 to $E000-$EFFF. The monitor resides at $F800-$FFFF, for both configurations. The DMA addressing of the DMAF1 and DMAF2 8" disk controller boards is moved from $9000-$93FF to $F000-F300. The DOS resides at $C000-$DBFF. The system Stack Pointer is loaded at $DFFF. The Direct Page register is loaded to zero.

Documentation is complete for both operation and construction. The complete modification procedure is given for the motherboard (both versions) and the 8" disk controller. Double view prints and component layouts are given for both motherboards and all memory boards sold by SWTPC, including the 32K board.

Additional information concerning the SWPTC 6809 CPU board can be had by contacting:

Southwest Technical Products Corp
219 W Rhapsody
San Antonio, TX 78216

Total time to modify all boards; our case one 32K board, 3 8K boards and the motherboard-controller combination, 2 hrs. and 35 min.

A 68 Micro Journal rating: AAA.

Rating scale:
AAA - Excellent
AA - Good
A - Fair (could be better but works)
P - Poor and may not always work properly.
X - Not recommended for children (or anything else).

SS-50 C Bus Description

In order to take full advantage of the additional features available in the 6809 processor, the following changes have been made in the bus assignments. All SWTPC peripherals for 6809 systems will use the SS-50C specifications listed below.

50-PIN BUS ASSIGNMENTS

SS-50 6800 BUS	SS-50C 6809 BUS	SS-50 6800 BUS	SS-50C 6809 BUS
$\overline{D0}$	$\overline{D0}$	GND	GND
$\overline{D1}$	$\overline{D1}$	GND	GND
$\overline{D7}$	$\overline{D2}$	7-8 VDC UNR	7-8 VDC UNR
$\overline{D3}$	$\overline{D3}$	7-8 VDC UNR	7-8 VDC UNR
$\overline{D4}$	$\overline{D4}$	7-8 VDC UNR	7-8 VDC UNR
$\overline{D5}$	$\overline{D5}$	-12	-16
$\overline{D6}$	$\overline{D6}$	+12	+16
$\overline{D7}$	$\overline{D7}$	INDEX	INDEX
A15	A15	$\overline{M.RST}$	M. RDY
A14	A14	$\overline{NMI}$	$\overline{BUSY}$
A13	A13	$\overline{IRQ}$	$\overline{IRQ}$
A12	A12	UD2	$\overline{FIRQ}$
A11	A11	UD1	Q
A10	A10	$\overline{\phi 2}$	E
A9	A9	$\overline{VMA}$	$\overline{VMA}$
A8	A8	R/W	R/W
A7	A7	$\overline{RESET}$	$\overline{RESET}$
A6	A6	BA	BA
A5	A5	$\phi 1$	BS
A4	A4	HALT	$\overline{HALT}$
3	A3	100b	$\overline{BUS\ REQ}$ or 110b
A2	A2	150b	$3 or 9600b
A1	A1	300b	$2 or 300b
A0	A0	600b	$1 or 4800b
GND	GND	1200b	$0 or 1200b

30 PIN BUS ASSIGNMENTS

SS-30 6800 BUS	SS-30C 6809 BUS	SS-30 6800 BUS	SS-30C 6809 BUS
UO3	RS2	D4	D4
UO4	RS3	D5	D5
-12	-16	D6	D6
+12	+16	D7	D7
GND	GND	$\phi 2$	E
GND	GND	R/W	R/W
INDEX	INDEX	+8 VDC	+8 VDC
$\overline{NMI}$	$\overline{FIRQ}$	+8 VDC	+8 VDC
$\overline{IRQ}$	$\overline{IRQ}$	1200b	1200b
RS0	RS0	600b	4800b
RS1	RS1	300b	300b
D0	D0	150b	9600b
D1	D1	110b	110b
D2	D2	$\overline{RESET}$	$\overline{RESET}$
D3	D3	$\overline{I/O\ SEL}$	$\overline{I/O\ SEL}$

Functional Description—50-Pin Bus Lines

$\overline{D0}$ - $\overline{D7}$	The $\overline{D0}$ - $\overline{D7}$ lines carry inverted data bits 0 thru 7 respectively forming 8-bit data words which are exchanged between the various boards within the system.
A15 - A0	The A15 - A0 lines carry address bits 15 thru 0 respectively forming 16-bit addresses which are exchanged between the various boards within the system.
GND	The GND line is the system's common power supply and signal ground point.
7-8 VDC UNREG or +8 UNR	The 7 - 8 VDC UNREG is the line to which a +7 to 8 volt DC unregulated power supply should be attached. This voltage is then regulated down to +5 VDC by independent regulators on the various boards within the system.
-16, +16	The -16 and +16 are lines to which an isolated ground -16 and +16 power supply should be connected. The voltages are necessary for generating the currents required by 20mA. current loop and RS-232 equipment on the serial interfaces and by dynamic memory boards.
INDEX	The INDEX is an unused line and is provided so the pin on each of the male connectors may be cut with the corresponding female connector pins plugged, preventing the circuit boards from being plugged on incorrectly.
M.RDY	MEMORY READY is the wire-OR control line on the bus that allows the processor to work with peripheral devices slower than the clock speed of the system. It works by stretching the E phase of the clock for up to 10 microseconds.
$\overline{BUSY}$	The $\overline{BUSY}$ line is a wire-OR line on the bus that goes low to deny external access to memory or peripherals during a 6809 READ/MODIFY/WRITE cycle.
$\overline{IRQ}$	The $\overline{IRQ}$ is the wire-OR maskable single level interrupt request line feeding the processor board.
$\overline{FIRQ}$	The $\overline{FIRQ}$ is the wire-OR maskable single level fast interrupt request line feeding the processor board.
Q	The Q line is a new clock output line that leads E (formerly $\phi 2$) by approximately 90° in phase. Its high to low transitions indicates that the address output on the address bus is valid.
E	The E is the clock line formerly known as $\phi 2$. Data is valid out of the processor during a write on the falling edge of E and is clocked into the processor during a read on the rising edge of E.
$\overline{VMA}$	The $\overline{VMA}$ line is a normally high line that goes low when a valid processor address is output onto the bus.
R/W	The READ/WRITE line establishes the direction of data flow on the eight data lines, D0-D7. It is high for a read from memory or interface and is low for a write to memory or interface.
$\overline{RESET}$	The $\overline{RESET}$ line when low resets the registers internal to the processor and interfaces, and loads the ROM stored mini-operating system. This line is activated by a one-shot when the system is first powered up.

BA	The BUS AVAILABLE line goes high acknowledging a processor halt, bus grant or sync.
BS	The BUS STATUS line goes high acknowledging a halt, bus grant or interrupt. This line along with the BA line may be used to determine the status of the processor. BA and BS are valid on the falling edge of Q.

BA	BS	
0	0	normal
0	1	interrupt acknowledge
1	0	sync acknowledge
1	1	halt acknowledge or bus grant

$\overline{HALT}$	The wire-OR $\overline{HALT}$ line when brought low halts the processor and frees the system information bus for external control.
$\overline{BUS\ REQ}$	The wire-OR $\overline{BUS\ REQUEST}$ line when brought low tri-states the bus for short term DMA type data transfers. Unlike the halt sequence, BUS REQ is granted immediately.
S3 - S0	The S3 thru S0 lines are extended address lines intended for a future paged memory system.

Functional Description — 30-Pin Bus Lines

RS2	The RS2 (Register Select 2) line is the buffered A2 address line.
RS3	The RS3 (Register Select 3) line is the buffered A3 address line.
−18, +16	(same as 50-pin bus)
GND	(same as 50-pin bus)
INDEX	The INDEX is an unused line and is provided so the pin on each of the male connectors may be cut with the corresponding female connector pins plugged preventing circuit boards from being inserted incorrectly.
$\overline{FIRQ}$	(same as 50 pin bus)
$\overline{IRQ}$	(same as 50 pin bus)
RS0	The RS0 (Register Select 0) line is the buffered A0 address line.
RS1	The RS1 (Register Select 1) line is the buffered A1 address line.
D0 - D7	The D0 - D7 Data lines are inverted and buffered 50 pin bus data lines $\overline{D0}$ - $\overline{D7}$.
E	The E line is the inverted and buffered 50 pin bus $\overline{E}$ line.
R/$\overline{W}$	The R/$\overline{W}$ line is the buffered 50 pin bus R/$\overline{W}$ line.
+8 VDC	The +8 VDC line is electrically the same as the 50-pin bus 7.8 VDC UNR line.

1200b, 4800b, 300b, 9600b, 110b
These lines carry the 16X baud rate clocks for the serial interface used in the system. They carry baud rate clocks of 1200, 4800, 300, 9600 and 110 baud respectively. When the High Baud option on the processor board is selected, they may carry clocks for 4800, 19200, 1200, 38400, and 440 baud respectively.

*** Late release by 68 Micro Journal ***

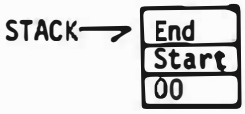
Since the introduction of the SWTPC 6809 CPU board. We have heard many good comments. The only mutterings, I have heard, concern the lack of documention, for the 6809 monitor 'SBUG-E', routine entry points. Many of the routines previous monitors have supported are listed in the manual with the 6809 CPU board. For routines that are not included, the following is published, for those who need this sort of programming information. It should be kept in mind that the reason these are not released by SWTPC, is because they may not be located, at the same address, in future monitor versions, from SWTPC. I repeat, they may not support the same address vectors, in future versions. However, for the programmer needing this information, we are releasing the documented and undocumented routine addresses or vectors:

Indirect vector addresses
Documented

START	F800
NEXTCMD	F802
INCH	F804
INCHE	F806
INCHEK	F808
OUTCH	F80A
PDATA	F80C
PCRLF	F80E
PSTRNG	F810
LRA	F812

Undocumented

DISK	FAF1	BOOT DMAF
MDISK	FBB0	BOOT MF-68
LOAD	FC09	LOAD Mikbug(tm) TAPE
PUNCH	FC75	PUNCH TAPE




```
GETPAIR FD20 Get pair of address Y,X
GETADDR F2DB Get hex address X
GETBYTE FD3C Get hex byte A
GETDIG  FD5C Get hex digit A
HEXADR  FD6A Convert Addr to hex X
HEXBYTE FD72 Convert byte to hex A
HEXDIG  FD7E Convert digit to hex A
BINBYTE FD88 Convert byte to binary
             A,X to char string
PDATA1  FDAC Output 'A' folowed by a string
OUT2S   FDDB Output two spaces
OUTS    FDDD Output one space
ACIAI   FDF1 Initalize ACIA
ACIAPTR DFE0 Address of ACIA
EXAMEM  F99C Display memory Y=Start
                            X=End
```

there you have it. Good programming.

NOTE: ALL BACK ISSUES OF 68 MICRO JOURNAL ARE PRACTICALLY EXHAUSTED.

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COST PER ISSUE

$3.50 ea. Includes postage and handling. USA

$4.50 ea. Includes postage and handling. Foreign

JPC AD-16 KIT

A 68 Micro Journal Lab Review

There seems to always come the time when the average computer user needs to communicate, through the computer, with the outside world. The digital computer can do almost anything, that is as long as it can be input in two modes, on or off. The AD converter allows it to escape this requirement by converting those linear representations to the on and off status, which the computer understands and works with.

The AD-16 is a 16 channel precision analog input board. The board is rated .39% resolution or 0-5 millivolts DC at gain equal 1. Gains of 1 to 1000 are possible. The kit is supplied set up for software selectable gains of 1, 5, 10 and 100. The board allows auto-ranging for maximum signal resolution.

The additional specs as given for the AD-16 board: it has a sample speed in excess of 3300 samples per second with gain changes. The conversion error is less than 0.7% total. Noise is rated at less than +/-1 LSB at gain = 100. The kit comes with complete documentation, including instructions for construction, and programming examples.

An example of the documentation is the following routines and programs, in BASIC or Assembler.

1. AD-16 Checkout BASIC, this routine is in fact a 16 input test routine for the board. It functions as a digital voltmeter.

2. Data Acquisition BASIC, this program, in conjunction with the JPC Clock Kit (which we have not reviewed), provides data scan at programmed intervals. Auto ranging is used to set the optimum gain for each channel.

3. High Speed Data Acquisition Machine Language, this program, in machine language, stores to buffer with a format memory address table, in a total random access mode. Data can be saved to tape (via the JPC TC-3 cassette interface), reviewed earlier in 68 Micro Journal. Or the data can be saved to disk by a save memory routine.

The heart of the calibration is an individually calibrated voltage regulator on the board. Each regulator is shipped with a slip of paper indicating the actual voltage to 1/1000 of a volt. The board is calibrated to this reference voltage.

In addition to the above the documentation has diagrams and hints on how to interface for the following AD functions: position measurements, photoelectric (light) measurments, pressure measurements, temperature measurements and an auto ranging volt-ohm meter.

The kit is advertised for $69.95 plus $2.00 shipping. Total time to construct and calibrate: 2.5 hours. Additional information can be secured from:

JPC Products
PO Box 5615
Albuquerque, NM 87185

The JPC AD-16 kit is rated AAA.

Rating scale:
AAA - Excellent
AA - Good
A - Fair (could be better but works)
P - Poor and may not always work properly
X - Not recommended for children (or anything else)

NOTICE

CRUNCHERS CORNER should be back in the October issue. Dr. Jack Bryant has been on 'Special Project' for the past two months, but promises to have things rolling again in the October issue.

We appreciate all the calls and letters inquiring about CRUNCHERS CORNER, and especially appreciate all the nice comments conerning this popular column.

For those missing parts of CRUNCHERS CORNER, we are glad to announce that the complete series will be published, sometime in the not too distant future, as a softback. Those who desire to reserve a copy from the first press run should contact 68 Micro Journal and make your desire know. The price will be announced within the next few months.

LETTERS

GIMIX INC. 1337 WEST 37th PLACE • CHICAGO, ILLINOIS 60609 • (312) 927-5510 •

August 20, 1979

Don Williams
'68' Micro Journal
3018 Hamill Road
Hixson, TN 37343

Dear Don:

In answer to the questions you relayed to us from your readers:

1. All systems now being shipped are with our new Mother Boards.
2. We will have a 6809 CPU card but will not advertise it until we are ready to ship. (Hopefully early in 1980.) We are dedicated to the proposition that we want to give the user the utmost versatility in order that he can choose from the widest range of software packages available.
3. How to the question of burying the 6800. We ourselves have a fortune in time and money invested in our real time, machine language, House Operating System. We must therefore, for our own needs, continue to make a 6800 CPU. We are sure there are others in the same boat, so please assure them we shall row together. The same thing holds true for our GMOSTable RAM cards. This card will be in our line for a long time to come.
4. Our policy is to use your Journal to disseminate information, and in particular Patches for GMXbug for new versions of software. The reason is that we have no way of keeping track of GMXbug and our Video board users, especially since so many are bought through dealers. You are a journal (as opposed to a Magazine) and have been able to get out information timely. Your readers are a closed universe - namely 6800 users - and your job is to keep them up to date. This is a good case of where everybody wins. We service our users; our users get timely news; and you get subscription renewals.

With Best Regards,
GIMIX, INC.

By Dick
Richard Don

RD/jb

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

SCHOOL OF CERAMIC ENGINEERING

August 2, 1979

Digital Service & Design
P.O. Box 741
Newark, Ohio 43055

Gentlemen:

When my Secretary inquired on the shipping date for our recent order of DSD2114 16K memory boards, a question was raised on the use of such a large number of boards.

I am pleased to report that the 6800 Users Group in the Atlanta Computer Society has most of the 14 boards our members purchased up and running. We have experienced little difficulty with them, most problems have been solder bridges in assembly. One member found one of the LS138's in the decode circuit for his MSI system critical (and used a Selected 'S138). I am familiar with his system, and he has made modifications and I fear his buss is noisy rather than the board being at fault.

We used 250 4s 2114s (low power) which we obtained, in quantity at $5.50 each for a total board cost to each member, of $220 with sockets. If we had been able to obtain sufficient 450ns ones at 4.75 each, the cost would have been below $200 each -- a real bargain either way. Our test showed 450ns low power 2114s and 'S138 chips to be reliable also.

We will be pleased to express our enthusiasm over your board to anyone who inquiries.

Cordially,
Joe Pentecost
Joseph L. Pentecost, Director
School of Ceramic Engineering

JLP:lec

cc: M. Fergerson,
'68 MICRO

Patches for GMXBUG 2.0 and GMXBUG 3.0

by Richard Rostrom

(C) 1979 Gimix, Inc.

SSB DOS 5.0

at	replace	with	purpose
B3B6	A6 00 47	A6 01 48	PIA control register is at odd address flag bit is b7 not b0

SSB DISK FILE BASIC DFB-68

at	replace	with	purpose
010B	01	C8	move control port to port #4
014C	01	41	port #0 is resident cassette
0164	81	01	port #1 is not control port
0167	7E 72C1 7E 72C4	7E 01FC 7E 022C	use standard jumps for port #1
017C	04	90	port #4 is control port and standard PIA for break test
017F	7E 01FC 7E 022C	3F 11 39 3F 25 39	use GMXBUG calls for control port

PERCOM DATA CO., INC. TM-LFD-4##-2#

TECHNICAL MEMO JULY 1, 1979

SUBJECT: MODIFYING INDEX FOR ESCAPE KEY CONTROL OF THE DISPLAY PAUSE FUNCTION

SEVERAL INDEX USERS HAVE EXPRESSED A DESIRE TO USE THE ESCAPE KEY AS A DISPLAY "PAUSE" TOGGLE CONTROL INSTEAD OF THE CONTROL-S AND CONTROL-Q KEYS WHICH NORMALLY "PAUSE" AND "UNPAUSE" THE CONSOLE DISPLAY. THE FOLLOWING PATCH TO THE INDEX DOS IMPLEMENTS THIS CHANGE.

PROCEDURE:

1. USE MINIDOS OR MINIDOS-PLUSX TO LOAD (DO NOT EXECUTE) THE INDEX DOS.
2. IF YOU ARE USING MINIDOS-PLUSX RETURN TO SWTBUG. (X)
3. CHANGE THE FOLLOWING LOCATIONS IN INDEX:

ADDRESS	VALUE	REMARKS
A255	1B	ESCAPE KEY
B4#A	1#	TST QSTOGL
B4#B	7D B651	TST QSTOGL
B4#E	27 #4	BEQ
B41#	BD 52 C7	JSR QSOCLR
B413	5B	RTI

THE COMPLETE LISTING OF THE INDEX CONSOLE CONTROL MODULE IS CONTAINED IN APPENDIX C OF THE INDEX ADVANCED PROGRAMMERS GUIDE.

4. SAVE THE INDEX DOS BACK TO DISK USING THE MINIDOS SAVE PROCEDURE. DO NOT USE THE MINIDOS-PLUSX SAVE PROCEDURE. SINCE THE MINIDOS-PLUSX DIRECTORY IS STORED IN MEMORY OCCUPIED BY THE INDEX DOS IT WILL DESTROY A PART OF INDEX.

   TO SAVE THE INDEX DOS YOU MUST ESCAPE FROM MINIDOS-PLUSX TO MINIDOS USING THE MINIDOS-PLUSX "M" COMMAND (FOLLOWED BY RETURN).

```
M(CR)
S A1## B7FF A1## OSSS
```

YOU MUST PROVIDE THE OSSS VALUE WHERE YOU WANT THE INDEX DOS SAVED ON DISKETTE.

A major maker of computer products has a surplus of 'constant voltage' heavy duty transformers. These with the furnished ac capacitor will supply unregulated voltages of the following values:

9v at 25 amps
-16v at 5 amps
+16v at 5 amps

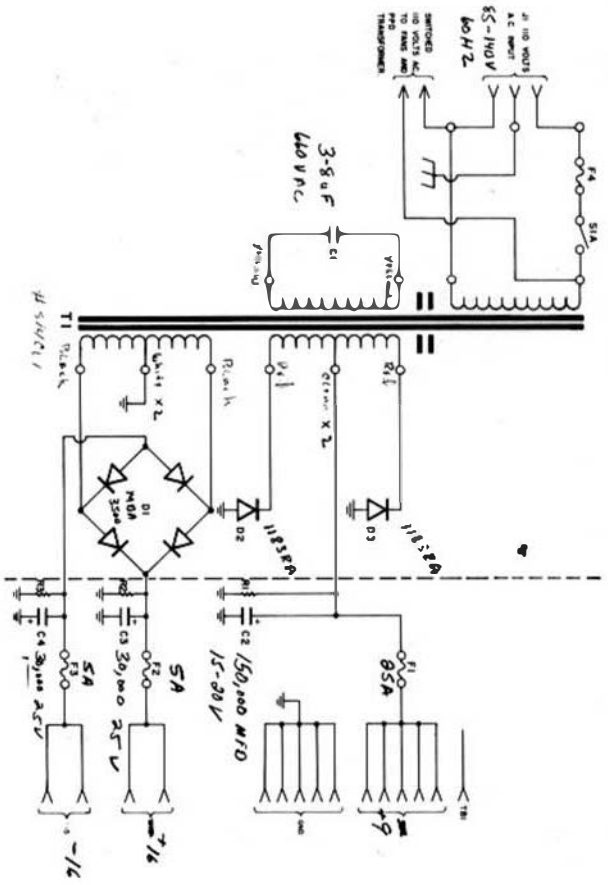
This supply requires only rectifiers and filter capacitors to complete the project. A wiring diagram is included.

We use a supply practically indentical to this on one of our computers. It will maintain a constant output from below 70 volts to over 140 volts ac input. On testing of power 'flicks' we have found that this supply will hold for at least 6 cycles. All the above are considered conservative limits. Actually we have turned the supply back (with a variac) and had it continue to operate at input voltages below 50v ac input.

We have access to only 50 of these units, it will be 'first come, first served'. The package consisting of the power transformer and ac capacitor will sell for $74.00, with diagram. shipping (UPS) is included in this price. Power supplies of like quality normally retail for well over $200.00. The above price is a quanity manufacturers price and is being made exclusively for the readers of 68 Micro Journal.

Those interested should forward their 'certified or bank' check or money order to 68 Micro Journal and we will forward to the seller. Again I repeat, this is not a 68 Micro product and we are not selling these. We just felt it was a good deal for many who need additional current capacity and voltage regulation for their system. 68 Micro makes no warranty concerning these units, they are being sold and delivered by the computer company making us this offer.

These are all new components. The size of the transformer is 5 1/2 inches tall, 5 1/4 inches wide and 4 1/2 inches deep. The weight is 16.5 lbs.



* CLASSIFIED *

Mite Corp TTY similar to Expandor Black Box w/keyboard, manuals and 6800 routines, excellent condition, $200.00, call: Tom, 1-904-752-8384.

WANTED SWTPC compatible hardware; terminal, disk, printer or what have you. Working or not working. Give description and price. W.L. King, 310 S Heyward, Bishopville, SC, 29010, 803-484-5482 days, 803-484-6657 after 6 p.m. Eastern.

AC-30 SWTPC tape interface, working, excellent condition, Don, 615 870-1993, $69.00.

If you have any 6800/09 boards, attachments, interfaces, computer components, etc., this is where they should be advertised. We ran an ad on CT-64 and received over 50 calls and sold ours and three others besides.

QUIRKS

Quirks are sometimes found in unsuspected places. When discovered they will be reported. If you know of the hiding place of a quirk; let us all know.

The instruction CLR (memory) has a quirk. Maybe some of the others do also, check em out and let me know.

CLR Quirk

It seems that the instruction CLR (memory) does a read prior to storing the zero. Beware; when addressing the output register of a PIA. The interrupt flags get diddled with.

This was submitted by:

Ted Wolff
579 W 215th
New York, NY 10034

Ted suggest that the TST, COM and other instructions be checked. O.K. folks, have at it.

BASIC (Quickie)

July 10,1979

Hello,

I'm sending along another "BASIC Programming Quickie" for SWTPC BASIC, Ver. 2.3. Many '68' Micro Journal readers may find useful.

Keep up the good work.

David Eagle
3330 S Garland Way
Lakewood, CO 80227

```
   ATAN3 SUBROUTINE
7000 REM ATAN3 SUBROUTINE
7010 REM INPUTS A=SIN(Q) B=COS(Q)
7020 REM OUTPUTS Q=ATAN3(A/B)
7030 REM 0 ≤Q ≤2*PI, RADIANS
7040 PO=3.14159265
7050 REM SINGULARITIES
7060 IF A>0 IF B=0 THEN
     Q=PO/2: RETURN
7070 IF A<0 IF B=0 THEN
     Q=3*PO/2: RETURN
7080 REM FIRST QUADRANT
7090 IF A>=0 IF B>0 THEN
     Q=ATAN (A/B): RETURN
7100 REM SECOND AND THIRD QUADRANT
7110 IF A<>0 IF B<0 THEN
     Q=ATAN(A/B)+PO: RETURN
7120 REM FOURTH QUADRANT
7130 IF A<=0 IF B>0 THEN
     Q=ATAN(A/B)+2*PO: RETURN
7140 END
```

Ed's Remarks:

Thanks David; you just got another subscription extension. Keep em coming.

SEE FOLKS how easy it is to be world famous and getting your subscription extended. How about it readers, lets have your offering.

Coming Reviews - Software and Other Goodies

SPL/M - A 6800 compiler, writes very efficient 6800 code. Runs under FLEX. from: PROGRAMMA, 3400 Wilshire Blvd., Los Angles, CA 90010.

FOURTH - A tape complier, Kansas City format. from: PROGRAMMA, 3400 Wilshire Blvd., Los Angles, CA 90010.

FLEX - For the 6809, assorted programs and utilities, including the new TSC BASIC. From: TSC, Box 2574, W. Lafayette, IN 47906.

FLEX - For the TANO 'Outpost', from: Great Plains Computer Company, PO Box 916, Idaho Falls, IO 83401.

SPIRIT - A Fourth like compiler, runs under SSB Dos, from: HHH Enterprises, Box 493, Laurel, MD 20810.

INDEX - A 6800 Dos running in interrupt mode, from, PERCOM, 511 N. Kirby, Garland, TX 75042.

CP/68 - A 6800 Dos running in interrupt mode, from: Hemenway Associates, Inc., 101 Tremont St., Boston, MA 02108.

SDOS - A 6800 Dos and associated software including; SO Business BASIC compiler, context editor, two pass assembler and other SD software for the 6800. From: Software Dynamics, 2111 W. Crescent, Ste. G, Anaheim, CA 92801.

PASCAL - A 6800 compiler running under FLEX, from: LUCIDATA, oosteinde 223, 2271 EG Voorburg, Netherlands.

6809 EDITOR & PROCESSOR - An advanced 'professional' editor and word processor from SWTPC, 219 W. Rhapsody, San Antonio, TX 78216.

DOS68.50 - An update of the Smoke Signal Broadcasting DOS with many enhancements, also Computerware Super Business Basic and Random Mailing List System, from: Computerware, 1512 Encinitas Blvd., Encinitas, CA 92024.

A/BASIC COMPILER - A BASIC compiler with support software consisting of the following; A/BASIC Source Generator, A/BASIC Interpeter, from: Microware, PO Box 4865, Des Moines, IA 50304.

LOOKUP - A 'Data Manager' runs under FLEX versions 1 and 2, including 'Create' a formatting program, from: Microftware, PO Box 1138, St. Charles, MO 63301.

We have other software coming or waiting for review. Please watch for these in coming issues. Also we have more hardware coming for review, memory boards, CPU boards, I/O boards, entire new computer systems, video boards, upgrades for the CT-64 and 1024 terminals, specialized boards (clocks, AD/DA converters, timer boards, etc) and more. As we promised, from the start, more 6800/09 info than all the others combined.

We are hearing really great things concerning the results of advertisers in 68 Micro Journal. We appreciate your letting them know 'YOU SAW IT IN 68 MICRO JOURNAL'.

If you know of a product you would like to see reviewed, contact both 68 Micro Journal and the manufacturer of the item. We receive many items for review because someone (or a lot of someones) asked for it. We are ALL fortunate in that most all products we receive for review work well. In fact, we have not received any that are real bummers (as is common for the S100 crowd).

I am sure that I have forgotten to include some item/items for review, so there will be more. Let us and the sellers know what YOU want.

TANO 6800 System

Coming in the near future is a review, in two parts, of the TANO 6800 computer and software (FLEX) available from Great Plains Computer Company, Inc., modified to run on the TANO.

Our initial impression is that the TANO when supported by FLEX, is a useable machine. We have had some difficulties with the TANO documentation. However the FLEX documentation, as furnished by Great Plains Computer Company, has been excellent.

Rather than search our files for recorded TANO users, we ask that if you are using the TANO, with or without FLEX, please send us a report of your impression of the system.

We find the hardware top quality and well designed. We are using our machine for inhouse record keeping and have experienced little difficulty with it, running under FLEX. However, before we complete our review, I would like the views of other users. This will not influence our review, but it may enable us to more completely report a more general overlook, of the TANO system.

We have received excellent cooperation from TANO and feel that there is a place for a 6800 machine of this type, although it does not use the S50 bus. Also we understand that it will not upgrade (by TANO) to the 6809. This we feel is unfortunate.

As has always been our policy, we desire as much input as we can secure, when reporting on a new item. Please keep your comments brief, but be concise. All comments should be forwarded to 68 Micro Journal, prior to November 1st, 1979.

Please no reports by telephone, we insist that all comments reported, good or bad, be backed up by written (and signed) communication.

GIMIX SUPER VIDEO BOARD

A 68 Micro Journal Lab Review

Have you ever needed to display, to the CRT, text in Hebrew (and from right to left), or say Greek (a lot we get on the CRT is Greek (of a sort)) or maybe your own personalized character set? Maybe special graphics is your need or just maybe you need all of the above and more. Well the GIMIX 'Super' Video Board we tested does all this and more.

The optional character set (or sets) can be easily created in a program furnished by GIMIX called 'MAKECHAR'. An editor in MAKECHAR allows complete cursor control and lays out the character, with each dot of the cell readily available to the cursor for character development. Once created or changed it is saved to disk or tape and can be called, at any time, to change to any character set you may have designed. More on MAKECHAR later.

We will look at various features of the GIMIX Super Video Board, one feature at a time.

Memory - CPU Address Space

The board uses a block of CPU RAM address space, starting at any 2K boundary. The GIMIX standard is $F000. Three on-board dip switches are available to set this 2K block to any address. There are 2 2K independent memory blocks on the board. One of these blocks is the Screen Memory and the other Character Generator Memory. Again by bit selection either of the 2K blocks may be moved to the CPU address space. Board memory may be addressed as any other system RAM. It should, however, be used for CPU Video Board communication. It is 'Ghostable' in that it can be made to disappear or reappear at different address locations. This can be useful or quite disturbing, depending on how carefully you use this feature. Improper coding could result in strange things happening.

Blanking

This feature and others is controlled by bit manipulation at video board control ports. These should not be confused with conventional control ports normally starting at $8000, normally associated with machine I/O. They are addressed at $F900. By the use of timing loops and delay routines the screen can be turned off and on at any desired rate.

Character Generators

There are three (3) character generators on the Super Video Board. Each contains patterns for 128 characters. A two bit code calls a respective character generator. Different character generators may be called at any time, by your program. Actually there are four generators on the board. One of them is a pseudo-generator and produces only blank space. Two ROM generators, the RAM generator (the do-it-yourself) and the pseudo-generator combine for a powerful display option.

Display Options

The display options are as follows: normal (white on gray or black), half intensity, inverse video or half intensity + inverse video.

Modes

Modes are a set of commands that instruct the video board on how to display characters contained in screen memory. The board can store two modes and use either. Modes are referenced as MODE 0 and MODE 1. The utilization of the MODE feature, while being one of the most useful of the board, is also one if not the most complex to master. Here we had some difficulty understanding what the instructions were trying to tell us. Again these are selected by bit setting and the references to 'Ports' caused some confusion. The confusion was compounded by the fact that programming the MODES was in some respect akin to programming a PIA. Some 'Ports' become write-only for some functions and at other times are conventional. Oh well, we had troubles learning how to program a PIA. GIMIX furnishes a chart that if studied carefully explains the entire operation. Unfortunately very few actual programming examples were given. (We understand that in the future more examples will be furnished) and it is only fair to point out that our evaluation board was one of the first shipped. The documentation has been improved. Essentially the MODES in conjunction with SLOTS (divisions of each

character generator) may be programmed to use portions of each character generator, depending on what the character ASCII code is. Once mastered this turns out to be quite a feature. The flexibility is appreciated by anyone using odd or custom characters.

Screen Access

The screen is normally displayed as 80 characters per line by 24 lines deep. For graphics the screen is X-Y addressable. Resolution is to each individual dot of the screen. This allows 1920 pixels per screen. All characters are stored in the lower 1920 bytes of Screen Memory. The highest 128 bytes of the Screen Memory is not used and is available to the CPU. Scrolling is hardware controlled. Cursor off or on is also a bit manipulation function. Also the cursor may be either flashing or steady. A flashing cursor has a duty cycle of approximately 25%, this allows the character under the cursor to appear in inverse mode. Vertical sync is refreshed at a 60 cycle rate. The screen is blanked during refresh and very little garbage is noticed. The vertical sync feedback (a bit on one of the ports designated as read-only) is available for beeps, LED driver or other uses.

MAKECHAR (optional utility)

As stated earlier the MAKECHAR program, in conjunction with the GIMIX super video board, makes it the do-all video board, in so far as character generation and display is concerned.

Data for each character is displayed and may be modified or redesigned by a cursor and grid scheme. There are no automatic separation cells in the system and each grid is 8X10. The cursor is indicated on the screen by a '+' or a 'O'. This is the drawing point, like the point on a pencil. Each dot can be changed as desired. Each grid may be developed normal or inverse, full or blank.

The program has 'DRAW' and 'ERASE' functions. The grid is laid out in a rosette pattern. The keyboard characters used are as follows: Q,W,E,D,Z,X,C each moves the writing or erasing cursor in the direction of the key used. The 'S' is at the center of the rosette.

The program has 21 commands that allows all of the features mentioned previously in addition commands allow each character to be saved, then step thru the ASCII set forward or backward or jump to any desired ASCII set position. As characters are drawn the hex value (which is always displayed for each character) changes, also the actual size character being modified or created is changed as the pointer moves.

The modified or newly created character set may be saved to disk or tape or moved to the video board character generator memory. The MAKECHAR program requires the system monitor to be GMXBUG 3.0.

The GIMIX Super Video Board is rated AAA. The MAKECHAR program is rated AAA.

Additional information may be obtained from:

GIMIX
1337 W 37th Place
Chicago, IL 60609

Rating scale:
AAA - Excellent
AA - Good
A - Fair (could be better but works)
P - Poor and may not always work properly
X - Not recommended for children (or anything else)

NEW PRODUCTS

MOTOROLA Semiconductor Products Inc.

EDITORIAL CONTACT: MARSHALL ROTHEN
(602) 962-3561

READER CONTACT: MICROSYSTEMS MARKETING
(602) 962-2223

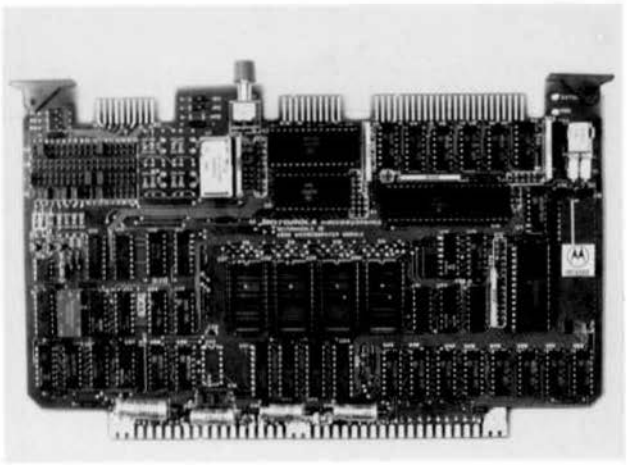
MOTOROLA INTRODUCES MICROMODULE 19 FEATURING THE POWERFUL 8-BIT MC6809 MPU

Phoenix, August 10, 1979....Motorola has introduced a new stand-alone monoboard microcomputer, the Micromodule 19, (Part Number M68MM19) that uses the advanced MC6809 microprocessor chip. This, in turn, endows the monoboard microcomputer with state-of-the-art processing capability.

For example - the MC6809 chip provides:

- high-level language orientation, providing for low-cost software development;
- an expanded addressing capability;
- a position-independent or relocatable code, and
- a constant instruction set which includes 16-bit instructions.

In addition, the 8-bit data (16 bit internal) /16-bit address of the MC6809 has several hardware and architectural enhancements which provide a radical throughput that qualifies it for many tasks previously unsuited for other microprocessors, such as high-level language execution and the use of position independent, relocatable program modules.



The new GIMIX MOTHER BOARD has all the features of our earlier MOTHER BOARD ------ PLUS:

Full compatability with the SS-50C (6809) bus-standard as well as the SS-50 (6800).

Schmidt trigger buffers on all address, data, and control signals to the I/O Bus.

Selection of 4, 8, or 16 decoded addresses Per I/O slot.

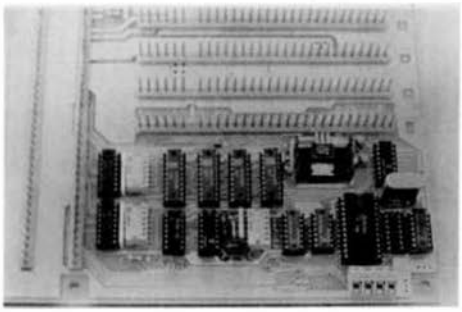
I/O Block is addressable to any 32, 64, or 128 byte boundary, (depending on the selected number of addresses per slot).

An on board baud rate generator that provides 9 standard baud rates from 75 to 9600.

Easy connection of up to 5 buffered baud rates to the bus with a DIP socket header.

An optional slow I/O circuit for the 6809 generates a signal, whenever the I/O ports are accessed, that can be used to stretch the system clock for 1/2 cycle. (This allows using 1 Mhz I/O cards with a 2 Mhz 6809 CpU.for example.)

A 4 position clamping terminal block for easier connections



Dear Don

While poking around in FLEX with BASIC I had to keep changing HEX addresses to Decimal, so I wrote a little HEX to DEC conversion program in BASIC, and then threw in a few remarks to make it clear, maybe?

To use the decimal values to modify the TTYSET values in FLEX I will include the following

ADDR	FUNC	HEX	DEC	COMMENT
AC00	BS	$08	008	
AC01	DL	$18	024	
AC02	EL	$3A	058	
AC03	DP	$10	016	
AC04	WD	$50	080	
AC05	NL	$04	004	
AC06	TB	$26	038	&
AC07	BE	$00	000	
AC08	EJ	$00	000	
AC09	PS			1=ON/0=OFF
AC0A	ES	$1B	027	

Hope you can use some of this.

Jim Caldwell

Another BASIC QUICKIE

You can set the left margins on a TTY-43 in BASIC by use of the following.

```
0100 print #3,tab(20);CHR$(27);
CHR$(108)
```

Or set the right margin

```
0200 print #3,tab(55);CHR$(27);
CHR$(114)
```

Or clear all tabs

```
0300 print #3,CHR(27);CHR$(120)
```

CHR$(27)=ESC,108=l,114=r,120=x

As you can see I have my TTY on PORT 3

Jim Caldwell
P.O.BOX 1601
PORT ISABEL TX 78578
512 943 5313

8300

SWITCH-INDICATOR CONTROLS

External Switches	Power On-Off Select-Deselect Line Feed
Internal Selector Switches	Print Direction (⇄ or →) SO/SI or SO only Non-Auto LF or Auto LF on CR code Non-Printing or Printing on LF, VT, FF codes
Internal Switches	Paper Empty Case Cover Lock

FEATURES

Standard

- Bidirectional Printing
- Character Set of 96 Symbols
- Tractor Feed
- One Line Internal Buffer
- 80 Character Print Line
- Double Size Character Set
- Low Cost

SPECIFICATIONS

Physical

Height	7.3 inches
Width	17.7 inches
Depth	14.8 inches
Weight	22 pounds

Environmental

Temperature	-25°–60°C (storage) 10°–35°C (operating)
Relative Humidity	0–90% (storage) 10–80% (operating)

Power Requirements

Voltage	115VAC±10%, 60Hz
Watts	100W operating, 7W stand-by

CHARACTERISTICS

8300

Print Features	125 characters per second 60 lines per minute 8.0 inches printable width 10 columns per inch (normal width) 5 columns per inch (double width) 1/6 inch line spacing
Form Feed	Pin Feed method 10 lines per second (slew speed) Loading from either bottom or rear
Forms	Pin-feed type 4.5 inch–9.5 inch including sprocket margins 0.013 inch maximum form thickness
Interface	8-bit parallel method
Control Signals	ACKNOWLEDGE, BUSY, SELECT, DATA STROBE, INPUT PRIME, FAULT, INPUT BUSY, PAPER EMPTY
Control Codes (ASCII)	CR, LF, VT, FF, CAN, SO, SI, DC1, DC3, GS, RS, US
Character Format	96 characters ASCII 5 x 7 dot-matrix Impact printed in normal width and double width
Character Buffer	1 line (80 characters in normal width, 40 characters in double width
Print Head Life Expectancy	100 x 10^6 characters

SOUTHWEST TECHNICAL PRODUCTS CORPORATION
219 W. Rhapsody
San Antonio, Texas 78216
(512) 344-0241

6540 SERIAL PRINTER

SPECIFICATIONS

Physical

Height	10 inches
Width	27 inches
Depth	19 inches
Weight	85 pounds

Environmental

Temperature	32–104°F. 0–40°C
Relative Humidity	10–90%

Power Requirements

Voltage	115 ± 10% AC, 60Hz
Phase	Single
Watts	150

FEATURES

Standard

Bidirectional Printing
Horizontal and Vertical Tabs
Character Set of 96 Symbols
Character View
Forward and Reverse Line Feeding
Line Feeding in Increments of 1/2, 1/6 and full line
512 Character Internal Buffer
132 Character Print Line
Double Size Character Set

SWITCH-INDICATOR CONTROLS

On/Off, On/Off Indicator, Run/Hold, Home Paper, Forms Override, Space Paper, Vertical Positioning. Data Communications: Local/Remote, Half/Full/ Echoplex, 110/300/1200 baud, Ready Indicator, Auto Answer.

CHARACTERISTICS

6540

Print Method	Serial/Impact
Character Structure	9 x 7 Dot Matrix (.105" high x .075" wide)
Printing Speeds	
Print Rate	120 characters per second
Tab/Carriage Return	36 inches per second
Equivalent Rate	165 characters per second unidirectional
Line Feed	4.5 inches per second
Data Input	Serial
Code	USASCII
Format	
Print Positions per Line	132
Horizontal Spacing	10 characters per inch
Vertical Spacing	6 lines per inch
Forms	
Dimensions	2½" to 15" width
Type	Continuous, sprocket fed
Number of Parts	Original and 4 carbons
Inking System	Cartridge ribbon
Transmission Rate	110, 300, 1200 baud—Operator selectable
Interface	RS 232-C or 20MA current loop
Type	Asynchronous

SWTPC

SOUTHWEST TECHNICAL PRODUCTS CORPORATION
219 W. Rhapsody
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```
0001 REM *  HEX TO DECIMAL CONVERSION
0002 REM *
0005 REM * C$ HOME AND CLEARS A CT-1024
0010  C$=CHR$(16)+CHR$(22):PRINT C$
0011 REM *
0015 REM * H$=HEX VALUES
0020 INPUT "HEX ADDRESS",H$
0021 REM *
0025 REM * MAKE ADDRESS 4 CHARACTERS
0030 IF LEN(H$)<4 THEN H$="0"+H$:GOTO 30
0040 FOR T=1TO4
0041 REM *
0045 REM * BREAK DOWN ADDRESS
0050  H$(T)=MID$(H$,T,1)
0051 REM *
0055 REM * CONVERT ABCDEF TO NUMBERS
0060 IF H$(T)="A" THEN H$(T)="10"
0070 IF H$(T)="B" THEN H$(T)="11"
0080 IF H$(T)="C" THEN H$(T)="12"
0090 IF H$(T)="D" THEN H$(T)="13"
0100 IF H$(T)="E" THEN H$(T)="14"
0110 IF H$(T)="F" THEN H$(T)="15"
0111 REM *
0115 REM * D=DECIMAL VALUE
0120  D(T)=VAL(H$(T))
0130 NEXT T
0131 REM *
0135 REM * ADD UP DECIMAL VALUES
0140  D=D(1)*4096+D(2)*256+D(3)*16+D(4)
0150 PRINT "DEC ADDRESS  ";D
0160 INPUT "ANOTHER",Q$
0170 IF LEFT$(Q$,1)="Y" THEN RUN
0171 REM
0180 REM : JIM CALDWELL
0190 REM : P.O. BOX 1601
0200 REM : PORT ISABEL TX 78578
0210 REM : 512 943-5313
0220 END
```

A ROUTINE TO USE THE PAUSE FEATURE OF FLEX-2 WITH BASIC

To activate the pause, POKE (44041,1), to deactivate the pause POKE (44041,0) ($AC09 in FLEX-2)

Being able to select the pause feature of FLEX-2 can be handy if using a CT-1024 with pageing or a high speed terminal at 9600 BAUD , It can also ease the pain if you find that the pause feature is set and you dont want to go back to DOS and use the TTYSET to change it

A short example of using the selectable pause feature.

```
10 Z$=CHR$(16)+CHR$(22):PRINT Z$
20 INPUT "ACTIVATE PAUSE",Q$
30 IF LEFT$(Q$,1)="N" THEN 50
40 POKE(44041,1) :GOTO 60
50 POKE(44041,0)
60 PRINT Z$
70 FOR T=1 TO 100
80 PRINT "TEST"
90 NEXT T
```

INTEG MOD (FLEX Utility)

Ken Stamm
15 E. 81 St.
NYC. NY 10028

The INTEG utility sold by TSC normally reads every free sector on a disk, makes sure that each one is readable and that there are indeed as many as the "System Information Record" thinks there should be. It reports that all is well, or if not, whether in effect there are too few ("ENCOUNTERED LAST SECTOR EARLY") or too many ("SECTOR COUNT ZERO - NOT END OF SPACE") of them.

INTEG can be made somewhat more useful by having it list out the disk address of each free sector in the chain as it reads it. This way, if something is wrong you'll at least know which free sector is in error. In addition, you'll be able to see how physically segmented, or non-contiguous the free space has become. The more segmented a disk's sector map, the more seeks necessary, and the slower a file's access becomes.

TSC conveniently supplies the source code for INTEG as a disk file. Adding our modifications simply involve editing the source and re-assembling it. These changes were made to the version sold for the DMAF1 8" disk system. They should work on the MF-68 Flex 2.0 version also.

Here goes...

First, find the label INT3 in the source code. It should read:

```
INT3 CLR 34,X CLEAR FLAG
     JSR FMS  CALL FMS
```

Change this portion to:

```
INT3 JSR PCRLF     NEW LINE
     LDX 64,X      THIS TRACK-SEC
     STX TEMP      SAVE IT
     LDX #TEMP     POINT TO TRACK
     JSR OUTHEX    PRINT IT
     LDA A #'-     PRINT DASH
     JSR PUTCHR
     LDX #TEMP+1   POINT TO SECTOR
     JSR OUTHEX    AND PRINT IT
     LDX #FCB      GET THE FCB BACK
     CLR 34,X CLEAR FLAG
     JSR FMS  CALL FMS
```

INTEG must be told about the 3 resident routines called here. Add these EQUates to the others at the start of the source:

```
OUTHEX EQU $AD3C
PUTCHR EQU $AD18
PCRLF  EQU $AD24
```

These code additions cause a relative branch elsewhere to branch too far. Easily fixed. Find the label INT25:

```
INT25 BNE INT6
      LDA A 93,X
```

INT6 is now too far away for a branch. Change to:

```
INT25  BEQ INT252
       JMP INT6
INT252 LDA A 93,X
```

That's it! Re-assemble the modified source into INTEG.CMD, or some other name. Whenever you use this new version, each free sector address should be displayed as TT-SS (Track-Sector, in hex) as it is read. The last one will read 00-00, signifying the end of the free sector chain.

```
            ORG     $A100

FMS         EQU     $B406
FCB         EQU     $A840
WARMS       EQU     $AD03
GETHEX      EQU     $AD42
RPTERR      EQU     $AD3F
PSTRNG      EQU     $AD1E
OUTHEX      EQU     $AD3C
PUTCHR      EQU     $AD18
PCRLF       EQU     $AD24
WASN        EQU     $AC0C
```

ADDED

```
A139 BD B4 06          JSR     FMS          CALL FMS
A13C 27 03     INT25   BEQ     INT252
A13E 7E A1 D6          JMP     INT6
A141 A6 5D     INT252  LDA A   93,X
```

ADDED. CHANGED BNE INT6 TO BEQ, JMP INT6

```
A173 BD AD 24  INT3    JSR     PCRLF
A176 EE 40             LDX     64,X
A178 FF A1 03          STX     TEMP
A17B CE A1 03          LDX     #TEMP
A17E BD AD 3C          JSR     OUTHEX
A181 86 2D             LDA A   #'-
A183 BD AD 18          JSR     PUTCHR
A186 CE A1 04          LDX     #TEMP+1
A189 BD AD 3C          JSR     OUTHEX
A18C CE A8 40          LDX     #FCB
```

PRINT EACH DISK ADDRESS. ADDED.

PERCOM 6809 ASSEMBLER V1.1

..... LIFE (A 6809 Program)

```
00001                   *
00002                   *
00003                   *
00004                   *                LIFE
00005                   *
00006                   *           FOR PERCOM DATA CO.
00007                   *           COPYRIGHT (C) 1979
00008                   *           ALL RIGHTS RESERVED
00009                   *            BY CLIFF RUSHING
00010                   *            1820 EDNA ST
00011                   *            ARLINGTON,TX
00012                   *            76010
00013                   *
00014                   ***************************************************
00015                          NAM   LIFE
00016                   *
00017                   * THIS IS A 6809 IMPLEMENTATION OF JOHN CONWAY'S
00018                   * GAME OF "LIFE". FOR MORE INFORMATION
00019                   * CONCERNING THE RULES OF THE GAME REFER TO:
00020                   *     SCIENTIFIC AMERICAN OCTOBER 1970
00021                   *     BYTE MAGAZINE SEPTEMBER 1975
00022                   *     BYTE MAGAZINE DECEMBER 1978
00023                   * THIS PROGRAM IS WRITTEN FOR THE PERCOM 6809
00024                   * COMPUTER USING THE PERCOM "ELECTRIC WINDOW"
00025                   * VIDEO DISPLAY. THE PROGRAM PROVIDES ALL
00026                   * NECESSARY INSTRUCTIONS AND INCLUDES AN EASY
00027                   * TO USE UTILITY FOR "SEEDING" THE DISPLAY.
00028                   *
00029                   * THIS PROGRAM REQUIRES LESS THAN 3K RAM AND
00030                   * RUNS ABOUT 7 GENERATIONS / SECOND. THIS IS
00031                   * VERY FAST, SO THE 'S' COMMAND WILL SLOW THE
00032                   * EVOLUTION. THIS PROGRAM REQUIRES THE
00033                   * "ELECTRIC WINDOW" DRIVER (WINDEX) AT $F800.
00034                   * THE 'M' COMMAND WILL MOVE A SEED TO $1000-
00035                   * $14FF SO THAT IN CAN BE SAVED TO DISK. THE
00036                   * 'F' COMMAND WILL ALLOW YOU TO RESTORE A SEED
00037                   * ALREADY SAVED SO THAT IT CAN BE ALTERED.
00038                   * ENTER 'BOOT' AT ADDRESS $103 TO LOAD AND RUN
00039                   * THE SEED AT $1000.
00040                   *
00041                   * THIS PROGRAM IS AVAILABLE THROUGH PERCOM USER'S
00042                   * GROUP (DISKETTE #1).
00043                   *
00044 0020                      ORG   $20
00045 0020      0002    POINT   RMB   2          *DISPLAY POINTER
00046 0022      0002    POINT2  RMB   2          *MATRIX POINTER
00047 0024      0001    CNT     RMB   1          *NUMBER OF LIVE CELLS
00048 0025      00      SPTEMP  FCB   0          *SPEED TEMP
00049 0026      0001    FLAG    RMB   1
00050                   *
00051           D800    BASE    EQU   $D800      *START OF VIDEO RAM
00052           FFD3    PSTR    EQU   $FFD3      *PRINT STRING
00053           F7FC    PORT    EQU   $F7FC      *CONTROL PORT
00054           FFEE    MON     EQU   $FFEE      *SYSTEM MONITOR
00055           F803    VIDOUT  EQU   $F803      *VIDEO OUTPUT ROUTINE
00056           1000    TMPMAT  EQU   $1000
00057                   *
00058           004F    Z       EQU   'O         *UP KEY
00059           004B    Q       EQU   'K         *LEFT KEY
00060           003B    V       EQU   ';         *RIGHT KEY
00061           002C    W       EQU   ',         *DOWN KEY
00062                   *
00063 0100                      ORG   $100
00064 0100 7E 0106      4       JMP   INIT
00065 0103 7E 0206      4 BOPT  JMP   BOPT1
00066 0106 4F           2 INIT  CLRA
00067 0107 B7 DFCA      5       STA   BASE+7CA   *RESET CONTROLLER
00068 010A B7 DFCE      5       STA   BASE+$7CE  *SET UP TIMING CHAIN
00069 010D 86 65        2       LDA   #$65
00070 010F B7 DFC0      5       STA   BASE+$7C0  *HORIZ LINE COUNT
00071 0112 86 64        2       LDA   #$64
00072 0114 B7 DFC1      5       STA   BASE+$7C1  *INTERLACE H SYNC
00073 0117 86 6D        2       LDA   #$6D
00074 0119 B7 DFC2      5       STA   BASE+$7C2  *ROW SCAN CHAR
00075 011C 86 8F        2       LDA   #$8F
00076 011E B7 DFC3      5       STA   BASE+$7C3  *ROW FRAME
00077 0121 86 03        2       LDA   #$03
00078 0123 B7 DFC4      5       STA   BASE+$7C4  *LINE FRAME
00079 0126 86 20        2       LDA   #$20
00080 0128 B7 DFC5      5       STA   BASE+$7C5  *VERT START
00081 012B 86 0F        2       LDA   #$0F
00082 012D B7 0F 6      5       STA   BASE+$7C6  *LAST ROW
00083 0130 86 00        2       LDA   #0
00084 0132 B7 DFCA      5       STA   BASE+$7CA  *RESET CONTROLLER
00085 0135 B7 DFCE      5       STA   BASE+$7CE  *START TIMING CHAIN
00086 0138 86 FF        2       LDA   #$FF
00087 013A B7 DFCC      5       STA   BASE+$7CC  *TURN OFF CURSOR
00088                   *
00089 013D 8E D800      3 CLEAR LDX   #BASE      *POINT AT TOP LEFT
00090 0140 86 20        2       LDA   #$20       *FILL WITH SPACES
00091 0142 A7 80        6 S1    STA   0,X+       *FILL
00092 0144 8C D000      4       CMPX  #BASE+$500  *END?
00093 0147 26 F9        3       BNE   S1         *NO
00094                   *
00095 0149 8E 02EA      3       LDX   #PROMPT    *PRINT PROMPT
00096 014C BD FFD3      8       JSR   PSTR
00097 014F BD 029C      8       JSR   IN         *WAIT TO CONTINUE
00098                   *
00099 0152 86 1A        2       LDA   #$1A
00100 0154 BD F803      8       JSR   VIDOUT
00101 0157 86 FF        2       LDA   #$FF
00102 0159 B7 DFCC      5       STA   BASE+$7CC  *TURN OFF CURSOR
00103 015C 8E DA36      3       LDX   #BASE+$256  *CENTER OF SCREEN
00104 015F 9F 20        5       STX   POINT
00105                   *
00106 0161 9E 20        5 GETCMD LDX  POINT      *TURN ON CURSOR
00107 0163 E6 84        4       LDB   0,X
00108 0165 CA 80        2       ORB   #$80
00109 0167 E7 84        4       STB   0,X
00110 0169 BD 029C      8       JSR   IN         *GET COMMAND
00111 016C 9E 20        5       LDX   POINT      *TURN OFF CURSOR
00112 016E E6 84        4       LDB   0,X
00113 0170 C4 7F        2       ANDB  #$7F
00114 0172 E7 84        4       STB   0,X
00115 0174 8E 02C5      3       LDX   #TABLE     *POINT AT TABLE
00116 0177 A1 84        4 G1    CMPA  0,X        *MATCH?
00117 0179 27 08        3       BEQ   DO         *YES
00118 017B 30 03        5       LEAX  3,X        * OINT AT NEXT
00119 017D 6D 84        6       TST   0,X        *END OF TABLE?
00120 017F 26 F6        3       BNE   G1         *NO
00121 0181 20 DE        3       BRA   GETCMD     *NEXT COMMAND
00122                   *
00123 0183 AE 01        6 DO    LDX   1,X        *POINT AT ROUTINE
00124 0185 AD 84        7       JSR   0,X        *DO IT
00125 0387 20 D8        3       BRA   GETCMD     *NEXT COMMAND
00126                   *
00127 0189 9E 20        5 RIGHT LDX   POINT      *GET POINTER
00128 018B 30 01        5       LEAX  1,X        *MOVE RIGHT 1
00129 018D 8C DCFF      4       CMPX  #BASE+$4FF  *END OF SCREEN?
00130 0190 27 03        3       BEQ   R1         *YES
00131 0192 9F 20        5       STX   POINT
00332 0194 39           5       RTS
00133                   *
00134 0195 8E D800      3 R1    LDX   #BASE      *POINT AT TOP LEFT
00135 0198 9F 20        5       STX   POINT
00136 019A 39           5       RTS
00137                   *
00138 019B 9E 20        5 LEFT  LDX   POINT      *GET POINTER
00139 019D 30 1F        5       LEAX  -1,X       *MOVE LEFT
00140 019F 8C D7FF      4       CMPX  #BASE-1    *END OF SCREEN?
00141 01A2 27 03        3       BEQ   LEFT1      *YES
00142 01A4 9F 20        5       STX   POINT
00143 01A6 39           5       RTS
00144                   *
00145 01A7 8E DCFF      3 LEFT1 LDX   #BASE+$4FF  *BOTTOM RIGHT
00146 01AA 9F 20        5       STX   POINT
00147 01AC 39           5       RTS
00148                   *
00149 01AD C6 50        2 DOWN  LDB   #80        *LINE COUNT
00150 01AF 9E 20        5       LDX   POINT      *GET POINTER
00151 01B1 30 01        5 D1    LEAX  1,X        *MOVE RIGHT 1
00152 01B3 8C D000      4       CMPX  #$D000+$4FF+1  *END OF SCREEN?
00153 01B6 27 06        3       BEQ   D2         *YES
00154 01B8 5A           2       DECB             *FINISHED?
00155 01B9 26 F6        3       BNE   D1         *NO
00156 01BB 9F 20        5       STX   POINT
00157 01BD 39           5       RTS
00158                   *
00159 01BE 8E D800      3 D2    LDX   #BASE      *POINT AT TOP LEFT
00160 01C1 20 EE        3       BRA   D1
00161                   *
00162 01C3 9E 20        5       LDX   POINT      *GET POINTER
00163 01C7 8C D000      4 U1    CMPX  #BASE      *END OF SCREEN?
00164 01CA 27 08        3       BEQ   U2         *YES
00165 01CC 30 1F        5       LEAX  -1,X       *MOVE LEFT 1
00166 01CE 5A           2       DECB             *FINISHED?
00167 01CF 26 F6        3       BNE   U3         *NO
00168 01D1 9F 20        5       STX   POINT
00169 01D3 39           5       RTS
00170                   *
00171                   *
00172 0104 8E D000      3 U2    LDX   #BASE+$500  *BOTTOM RIGHT
00173 0107 20 EE        3       BRA   U1
```

```
00174                          *
00175 0109 9E   20        5 ENTER LDX   POINT    *GET POINTER
00176 010B 86   2A        2       LDA   #'*      *CELL
00177 010D A7   84        4       STA   0,X      *DISPLAY
00178 010F 39             5       RTS
00179                          *
00180 0110 9E   20        5 DELETE LDX  POINT    *GET POINTER
00181 0112 86   20        2       LDA   #$20     *BLANK
00182 0114 A7   84        4       STA   0,X      *DISPLAY
00183 0116 39             5       RTS
00184                          *
00185 0117 BD   029C      8 SPEED JSR   IN       *GET NEW SPEED
00186 011A 84   0F        2       ANDA  #$F      *MASK OFF HI
00187 011C 97   25        4       STA   SPTEMP   *SAVE
00188 011E 39             5       RTS
00189                          *
00190 011F 8E   1000      3 SOFT2 LDX   #TMPMAT  *TEMPORARY MATRIX
00191 0122 108E D800      4       LDY   #BASE    *POINT AT SCREEN
00192 0126 A6   80        6 SOFT22 LDA  0,X+     *MOVE BEED
00193 0128 A7   A0        6       STA   0,Y+
00194 012A 108C DD00      5       CPY   #BASE+$5 0   *END?
00195 012E 26   F6        3       BNE   SOFT22   *NO
00196 0200 86   FF        2       LDA   #$FF
00197 0202 B7   DFCC      5       STA   BASE+$7CC  *TURN OFF CURSOR
00198 0205 39             5       RTS
00199                          *
00200 0206 8D   E7        7 SOFT1 BSR   SOFT2
00201                          *
00202 0208 108E 04CB      4 FIX   LDY   #MAT-81  *SET UP MATRIX POINTER
00203 020C 0F   24        6       CLR   CNT      *CLEAR LIVE COUNT
00204                          *
00205 020E 8E   051C      3 LIVE  LDX   #MAT     *CLEAR MATRIX
00206 0211 6F   80        8 L1    CLR   0,X+     *CLEAR BYTE
00207 0213 8C   0A1C      4       CPX   #MAT+$500  *END?
00208 0216 26   F9        3       BNE   L1       *NO
00209 0218 8E   0B00      3       LDX   #BASE    *POINT AT SCREEN
00210                          *
00211 021B 86   2A        2 L2    LDA   #'*
00212 021D A1   80        6       CMPA  0,X+     *SCREEN ALIVE?
00213 021F 26   18        3       BNE   L3       *NO
00214                          *INCREMENT MATRIX
00215 0221 6C   A4        6       INC   0,Y      *TOP LINE
00216 0223 6C   21        7       INC   1,Y
00217 0225 6C   22        7       INC   2,Y
00218                          *
00219 0227 6C   A8 50     8       INC   80,Y     *MIDDLE LINE
00220 022A 6C   A8 52     8       INC   82,Y
00221                          *
00222 022D 6C   A9 00A0 10        INC   160,Y    *BOTTOM LINE
00223 0231 6C   A9 00A1 10        INC   161,Y
00224 0235 6C   A9 00A2 10        INC   162,Y
00225                          *
00226 0239 31   21        5 L3    LEAY  1,Y
00227 023B 8D   54        7       BSR   CKBRK    *BREAK?
00228 023D 24   0C        3       BCC   L5       *NO
00229 023F 81   03        2 L4    CMPA  #3       *CONTROL C?
00230 0241 1027 FEC1      6       LBEQ  INIT     *YES
00231 0245 81   1B        2       CMPA  #$1B     *ESCAPE?
00232 0247 1027 FD9D      6       LBEQ  MON      *YES
00233 024B 8C   DD00      4 L5    CPX   #BASE+$500
00234 024E 26   CB        3       BNE   L2
00235                          *
00236 0250 D6   25        4       LDB   SPTEMP   *GET SPEED
00237 0252 27   0A        3       BEQ   NEWGEN   *NONE
00238 0254 8E   FFFF      3 L6    LDX   #$FFFF
00239 0257 30   1F        5 L7    LEAX  -1,X     *COUNT DOWN
00240 0259 26   FC        3       BNE   L7       *NOT YET
00241 025B 5A             2       DECB           *COUNT DOWN SPEED
00242 025C 26   F6        3       BNE   L6       *NOT YET
00243                          *
00244 025E 8E   0B00      3 NEWGEN LDX  #BASE    *SET UP POINTERS
00245 0261 108E 051C      4       LDY   #MAT
00246                          *
00247 0265 A6   A0        6 NEW   LDA   0,Y+     *GET NEIGHBOR COUNT
00248                          *
00249 0267 E6   84        4       LDB   0,X
00250 0269 C1   2A        2       CMPB  #'*      *LIVE?
00251 026B 26   04        3       BNE   NEW1     *NO
00252 026D 81   02        2       CMPA  #2
00253 026F 27   04        3       BEQ   NEW2     *REMAINS LIVE
00254 0271 81   03        2 NEW1  CMPA  #3
00255 0273 26   08        3       BNE   NEW3     *DIES
00256 0275 86   2A        2 NEW2  LDA   #'*
00257 0277 A7   80        6       STA   0,X+
00258 0279 0C   24        6       INC   CNT      *INC NUMBER OF LIVE CELLS
00259 027B 20   04        3       BRA   NEW4
00260 027D 86   20        2 NEW3  LDA   #$20     *GET RID OF OLD CELLS
00261 027F A7   80        6       STA   0,X+
00262                          *
00263 0281 108C 0A1C      5 NEW4  CPY   #MAT+$500  *END?
00264 0285 26   DE        3       BNE   NEW      *NO
00265                          *
00266 0287 0D   24        6       TST   CNT      *ANY LIVE CELLS?
00267 0289 27   03        3       BEQ   NEW5     *NO
00268 028B 7E   0208      4       JMP   FIN      *DO NEXT GENERATION
00269 028E 7E   0106      4 NEW5  JMP   INIT
00270                          *
00271 0291 B6   F7FC      5 CKBRK LDA   PORT     *GET STATUS
00272 0294 2B   03        3       BMI   CK1      *NO
00273 0296 1A   01        3       SEC            *YES
00274 0298 39             5       RTS
00275 0299 1C   FE        3 CK1   CLC
00276 029B 39             5       RTS
00277                          *
00278 029C B6   F7FC      5 IN    LDAA  PORT     *GET STATUS
00279 029F 2B   07        3       BMI   NONE     *NO
00280 02A1 91   26        4       CMPA  FLAG     *OLD?
00281 02A3 27   F7        3       BEQ   IN       *YES
00282 02A5 97   26        4       STAA  FLAG     * AVE
00283 02A7 39             5       RTS
00284 02A8 0F   26        6 NONE  CLR   FLAG
00285 02AA 20   F0        3       BRA   IN
00286                          *
00287 02AC 8E   D800      3 MOVE  LDX   #BASE    *POINT AT SCREEN
00288 02AF 108E 1000      4       LDY   #TEMPMAT *TEMPORARY MATRIX
00289 02B3 A6   80        6 MOVE1 LDA   0,X+     *MOVE
00290 02B5 A7   A0        6       STA   0,Y+
00291 02B7 8C   DD00      4       CPX   #BASE+$500  *END?
00292 02BA 26   F7        3       BNE   MOVE1    *NO
00293 02BC 7E   FFEB      4       JMP   MON
00294                          *
00295 02BF B0   01EF      8 FIX   JSR   SOFT2    *MOVE
00296 02C2 7E   0161      4       JMP   GETCMD   *RESTART
00297                          *
00298           02C5      TABLE   EQU   *
00299 02C5      4F                FCB   Z
00300 02C6      01C3              FDB   UP
00301 02C8      4B                FCB   O
00302 02C9      0198              FDB   LEFT
00303 02CB      2C                FCB   W
00304 02CC      01AD              FDB   DOWN
00305 02CE      3B                FCB   V
00306 02CF      0189              FDB   RIGHT
00307 02D1      0D                FCB   $D
00308 02D2      0208              FDB   FIN
00309 02D4      03                FCB   3
00310 02D5      0106              FDB   INIT     *ENTER NEW FIELD
00311 02D7      1B                FCB   $1B
00312 02D8      FFE8              FDB   MON
00313 02DA      20                FCB   $20
00314 02DB      0109              FDB   ENTER
00315 02DD      18                FCB   $18
00316 02DE      0110              FDB   DELETE
00317 02E0      53                FCB   /S/
00318 02E1      0117              FDB   SPEED
00319 02E3      4D                FCB   /M/
00320 02E4      02AC              FDB   MOVE
00321 02E6      46                FCB   /F/
00322 02E7      02BF              FDB   FIX
00323 02E9      00                FCB   0
00324                          *
00325 02EA      00        PROMPT  FCB   $D,$A
00326 02EC      20                FCC   /                LIFE/
00327 02FF      00                FCB   $D,$A,$A
00328 0302      45                FCC   /ENTER YOUR PATTERN USING A/
00329 031C      20                FCC   / (SPACE) FOR LIVE CELLS/
00330 0333      0D                FCB   $D,$A
00331 0335      45                FCC   /ENTER A (RETURN) WHEN FINISHED/
00332 0353      0D                FCB   $D,$A
00333 0355      45                FCC   /ENTER A (CONTROL C) TO START OVER/
00334 0376      0D                FCB   $D,$A
00335 0378      45                FCC   /ENTER A (ESCAPE) TO ABORT/
00336 0391      0D                FCB   $D,$A
00337 0393      45                FCC   /ENTER A (CONTROL X) TO DELETE/
00338 03B0      0D                FCB   $D,$A,$A
00339 03B3      20                FCC   /       /
00340 03BA      4F                FCB   Z
00341 03BB      20                FCC   /        U/
00342 03C3      4F                FCB   Z
00343 03C4      29                FCC   /) TO MOVE UP/
00344 03D0      00                FCB   $D,$A
00345 03D2      20                FCC   /       /
00346 03D8      4B                FCB   O,$20,V
00347 03DB      20                FCC   /       (/
00348 03E2      3B                FCB   V
00349 03E3      29                FCC   /) TO MOVE RIGHT/
00350 03F2      00                FCB   $D,$A
00351 03F4      20                FCC   /       /
00352 03FB      2C                FCB   W
00353 03FC      20                FCC   /       (/
00354 0404      2C                FCB   W
00355 0405      29                FCC   /) TO MOVE DOWN/
00356 0413      00                FCB   $D,$A
00357 0415      20                FCC   /                (/
00358 0425      4B                FCB   O
00359 0426      28                FCC   /) TO MOVE LEFT/
00360 0434      0D                FCB   $D,$A,$A
00361 0437      45                FCC   /ENTER (S) TO CHANGE SPEED (0-F)/
00362 0456      0D                FCB   $D,$A
00363 0458      45                FCC   /ENTER (M) TO MOVE SEED/
00364 046E      20                FCC   / TO TEMPORARY MATRIX/
00365 0482      0D                FCB   $D,$A
00366 0484      45                FCC   /ENTER (F) TO FIX SEED ALREADY SAVE
00367 04A7      0D                FCB   $D,$A
00368 04A9      45                FCC   /ENTER ANY CHARACTER TO CONTINUE/
00369 04C8      0D                FCB   $D,$A,4
00370                          *
00371 04CB      0051      MAT     RMB   81
00372 051C      0551              RMB   1361
00373                          *
00374 A048                        ORG   $A048
00375 A048      0106              FDB   INIT
00376           0000              END
TOTAL ERRORS   00000
```

BASIC (Not So Quickie)

Lower Case to Upper Case

Geoffrey A. Gass
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An assembly-language hacker at heart, I sometimes need to whip up something quick, and fall back on BASIC to do the job. Quick? Well, not always.

A very simple chore in assembly-language is to compare two strings of

mixed upper- and lower-case characters and -- regardless of form -- determine if the letters match. Here are the usual approaches:

(a) Before two letters are compared AND each of them with $5F, converting both temporarily to upper-case, or

(b) Make a comparison. If it fails, change one of the letters by an EOR (exclusive or) with $20, which will toggle bit 5 and change the case. If a second comparison fails, exit.

How can this be done in BASIC? Not easily. It will cost you a string-length numeric variable array, one or two dummy string variables, two numeric variables, and a bunch of code. Here's how it's done in a BASIC that supports the MID$ function and allows string concatenation:

During program initialization, dimension array B to the preset or default string length. A$ can be a dummy: to preserve the original strings X$ and Y$, do A$ = X$:GOSUB 9500:B$ = A$: A$ = Y$: GOSUB 9500: IF A$ = B$ THEN ... etc.

```
9500 L = LEN(A$)
9510 FOR I = 1 TO L
9520 B(I) = ASC(MID$(A$,I,1))
9530 IF B(I) > 96 THEN B(I) = B(I) - 32
9540 NEXT I
9550 A$ = CHR$(B(1))
9560 FOR I = 2 TO L
9570 A$ = A$ + CHR$(B(I))
9580 NEXT I
9590 RETURN
```

Needless to say, BASIC seems to ponder a while over a comparison involving this conversion. If you ever need a pregnant pause after a keyboard input -- this is it. Use it in the best of health!

DISKEDIT (Flex)

```
*
*BY R.P. LAJEUNESSE
*COPYRIGHT 5-27-79
*
*LAST EDITED 6-3-79
*
******
*USED TO "SCOPE OUT" THE DATA FROM A DISK DRIVE FOR
*PURPOSES OF ALIGNMENT. THE APPROPRIATE ALIGNMENT
*DISK MUST, OF COURSE, BE IN THE DRIVE.
*
*SERVES TO ALLOW OPERATOR TO SELECTIVELY POSITION TO
*AND READ ANY TRACK OF A SELECTED DRIVE. REQUIRES
*T.S.C. MINI-FLEX WITH AN ACIA AS INDICATED BELOW.
*
*COMMANDS:
*   0,1,2,3  SELECT DRIVE (DEFAULT = 0)
*   R        RESTORE TO TRACK 00
*   T DD     SET TRACK NUMBER (IN DECIMAL, 00 TO 39)
*   C        READ THE TRACK UNTIL SPACE BAR HIT
*   A        ALTERNATE FROM TRACK "T" TO 00, READING
*            UNTIL SPACE BAR IS HIT
*   Q        QUIT BY RETURNING TO DOS
*
* USE  R  AT STARTUP
* USE  C  TO CHECK INDEX SENSOR POSITION
* USE  T=16 THEN
* USE  C  FOR READING THE EYE PATTERN
* USE  T=33  THEN
* USE  A  TO SEE INDEX/HEAD SKEW
*
******
*FOR ALTERNATE COMMAND, A DELAY IS NEEDED
*
001E            CNTMAX  EQU     30
                *(ALTERNATE PASS COUNT VALUE)
                *(DELAY = 6 SEC IF NO READ ERRORS)
                *
                ******
                *PICK A SECTOR TO READ
                *
0004            SECNUM  EQU     4       AN ARBITRARY CHOICE
                *(I THINK SECTOR MUST BE IN 3-16 RANGE)
                *
                ******
                *T.S.C. MINI-FLEX SUBROUTINES
                *
7103            WARMB   EQU     $7103
710F            GETCHR  EQU     $710F
7112            PUTCHR  EQU     $7112
7118            PSTRNG  EQU     $7118
                *
7F00            READ    EQU     $7F00
7F09            RSTORE  EQU     $7F09
7F0C            DRVSEL  EQU     $7F0C
                *
                ******
                *I/O DEVICE
                *
8004            ACIA    EQU     $8004
8004            STATUS  EQU     ACIA
8005            DATA    EQU     ACIA+1
0001            RDRF    EQU     $01
                *
                *
                *
                *****************************
                *------DISKTEST------BY R.P.L.------*
                *****************************
                *
                *INITIALIZATION
                *
0100                    ORG     $0100
0100            PROGRM  EQU     *
                *
                *SET STACK
0100 8E 00 FF           LDS     #PROGRM-1
                *CLEAR RAM
0103 CE 02 1E           LDX     #TRKNUM-1
0106            CLRLUP  EQU     *
0106 08                 INX
0107 6F 00              CLR     0,X
0109 8C 02 E2           CPX     #FCBEND
010C 26 FB              BNE     CLRLUP
                *DRIVE NUMBER = 0
                *FALL INTO COMMAND LOOP
                *
                ******
                *COMMAND LOOP
                *
010E            GETCMD  EQU     *
                *
                *ISSUE PROMPT
010E CE 02 05           LDX     #PROMPT
0111 BD 71 18           JSR     PSTRNG
                *UNTIL INPUT
                *--CHECK FOR INPUT
0114 BD 71 0F           JSR     GETCHR
0117 84 7F              AND A   #$7F
                *IF NUMERIC AND < 4
0119 81 30              CMP A   #'0
011B 25 F1              BCS     GETCMD
011D 81 34              CMP A   #'4
011F 24 0A              BCC     ALPHA
                *--SAVE AS DRIVE NUMBER
0121 80 30              SUB A   #'0
0123 B7 02 2A           STA A   DRVNUM
0126 B7 02 20           STA A   DRVNMB
0129 20 E3              BRA     GETCMD
                *IF OTHER LEGAL COMMAND
012B            ALPHA   EQU     *
012B CE 01 F6           LDX     #CMDTBL
012E            CMDTST  EQU     *
012E A1 00              CMP A   0,X
0130 27 0A              BEQ     RUNCMD
0132 8C 02 02           CPX     #TABLEND
0135 27 D7              BEQ     GETCMD
0137 08                 INX
0138 08                 INX
0139 08                 INX
013A 20 F2              BRA     CMDTST
                *--EXECUTE (AS SUBROUTINE)
013C            RUNCMD  EQU     *
013C EE 01              LDX     1,X
013E AD 00              JSR     0,X
                *RETURN TO COMMAND LOOP
0140 20 CC              BRA     GETCMD
                *
                ******
                * R = RESTORE
                *
0142            RESTRE  EQU     *
                *
                *SET TRKNUM = 00
                *SELECT DRIVE
                *DO RESTORE
                *EXIT
                *
0142 7F 02 1F           CLR     TRKNUM
0145 CE 02 23           LDX     #FCB
0148 BD 7F 0C           JSR     DRVSEL
014B CE 02 23           LDX     #FCB
014E BD 7F 09           JSR     RSTORE
0151 39                 RTS
```

```
                        *
                        ******
                        * T = SET TRACK NUMBER
                        *
0152                    SETTRK  EQU     *
                        *
                        *ISSUE ADDITIONAL PROMPT
0152 86 3D                      LDA A   #'=
0154 BD 71 12                   JSR     PUTCHR
                        *FETCH THE DESIRED TRACK
0157 BD 01 D1                   JSR     GETBIN
015A 25 14                      BCS     ERROR
015C 16                         TAB
015D BD 01 D1                   JSR     GETBIN
0160 25 0E                      BCS     ERROR
                        *CONVERT FROM DECIMAL
0162 1B                         ABA
0163 1B                         ABA
0164 58                         ASL B
0165 58                         ASL B
0166 58                         ASL B
0167 1B                         ABA
                        *IF LESS THAN 40
0168 81 28                      CMP A   #40
016A 24 04                      BCC     ERRGR
                        *--SAVE AS TRKNUM
016C B7 02 1F                   STA A   TRKNUM
                        *AND EXIT
016F 39                         RTS
0170                    ERROR   EQU     *
0170 CE 02 6B                   LDX     #ERMSG
0173 BD 71 1B                   JSR     PSTRNG
0176 39                         RTS
                        *
                        ******
                        * Q = QUIT
                        *
0177                    QUIT    EQU     *
                        *
                        *COMPENSATE FOR JSR
                        *SO TO S S
                        *
0177 31                         INS
0178 31                         INS
0179 7E 71 03                   JMP     WARMS
                        *
                        ******
                        * C = CHECK
                        *
017C                    CHECK   EQU     *
                        *
                        *DO UNTIL SPACE BAR HIT
                        *--SELECT DRIVE
                        *--READ SECTOR OF TRKNUM
                        *ENDDO
                        *EXIT
                        *
017C BD 01 E2                   JSR     SPCTST
017F 25 19                      BCS     DONE
0181 CE 02 23                   LDX     #FCB
0184 BD 7F 0C                   JSR     DRVSEL
0187 CE 02 23                   LDX     #FCB
018A B6 02 1F                   LDA A   TRKNUM
018D C6 04                      LDA B   #SECNUM
018F BD 7F 00                   JSR     4648
0192 B6 02 20                   LDA A   DRVNMB
0195 B7 02 24                   STA A   DRVNUM
0198 20 E2                      BRA     CHECK
019A 39                 DONE    RTS
                        *
                        ******
                        * A = ALTERNATE
                        *
019B                    ALTRNT  EQU     *
                        *
                        *CLEAR FLAG
019B 7F 02 21                   CLR     FLAG
                        *DO UNTIL SPACE BAR HIT
                        *--TOGGLE FLAG
019E 73 02 21           FLOLUP  COM     FLAG
                        *--PRESET COUNT
01A1 B6 1E                      LDA A   #CNTMAX
01A3 B7 02 22                   STA A   COUNT
                        *--IF COUNT > ZERO
                        *----SELECT DRIVE
01A6 CE 02 23           CNTLUP  LDX     #FCB
01A9 BD 7F 0C                   JSR     DRVSEL
                        *----IF FLAG CLEARED
                        *------READ SECTOR 0 TRACK 00
                        *----IF FLAG SET
                        *------READ SECTOR 0 TRKNUM
01AC B6 00                      LDA A   #0
01AE 7D 02 21                   TST     FLAG
01B1 27 03                      BEQ     NOFLAG
01B3 B6 02 1F                   LDA A   TRKNUM
01B6 C6 04              NOFLAG  LDA B   #SECNUM
01B8 CE 02 23                   LDX     #FCB
01BB BD 7F 00                   JSR     READ
01BE B6 02 20                   LDA A   DRVNMB
01C1 B7 02 26                   STA A   DRVNUM
01C4 BD 01 E2                   JSR     SPCTST
01C7 25 07                      BCS     DONE2
                        *----DECREMENT COUNT
01C9 7A 02 22                   DEC     COUNT
01CC 26 D8                      BNE     CNTLUP
01CE 20 CE                      BRA     FLOLUP
                        *ENDDO
                        *EXIT
01D0 39                 DONE2   RTS
                        *
                        ******
                        *RESIDENT SUBROUTINES
                        *
                        *GET ASCII NUMERAL, CONVERT TO BINARY
                        *SET CARRY IF NON-NUMERIC
                        *
01D1                    GETBIN  EQU     *
                        *
01D1 BD 71 BF                   JSR     GETCHR
01D4 84 7F                      AND A   #$7F
01D6 80 30                      SUB A   #'0
01D8 25 04                      BCS     NOTBIN
01DA 81 0A                      CMP A   #10
01DC 25 02                      BCS     OKAY
01DE 0D                 NOTBIN  SEC
01DF 39                         RTS
01E0 0C                 OKAY    CLC
01E1 39                         RTS
                        *
                        *TEST FOR SPACE BAR HIT
                        *IF SO, RETURN WITH CARRY SET
                        *
01E2                    SPCTST  EQU     *
                        *
01E2 B6 80 04                   LDA A   STATUS
01E5 85 01                      BIT A   #RDRF
01E7 27 0B                      BEQ     NOKEY
01E9 B6 80 05                   LDA A   DATA
01EC 84 7F                      AND A   #$7F
01EE 81 20                      CMP A   #' (SPACE)
01F0 26 02                      BNE     NOKEY
01F2 0D                         SEC
01F3 39                         RTS
01F4 0C                 NOKEY   CLC
01F5 39                         RTE
                        *
                        ******
                        *COMMAND TABLE
                        *
01F6                    CMDTBL  EQU     *
                        *
01F6 52                         FCC     'R
01F7 01 42                      FDB     RESTRE
01F9 54                         FCC     'T
01FA 01 52                      FDB     SETTRK
01FC 43                         FCC     'C
01FD 01 7C                      FDB     CHECK
01FF 41                         FCC     'A
0200 81 9B                      FDB     ALTRNT
0202 51                         FCC     'Q
0203 01 77                      FDB     QUIT
0202                    TBLEND  EQU     *-3
                        *
                        ******
                        *TEXT STRINGS
                        *
0205                    PROMPT  EQU     *
0205 44                         FCC     'DT=> '
0206 54 3D
0208 3E 20
020A 04                         FCB     4
                        *
0203                    ERRMSG  EQU     *
0208 3E                         FCC     '>--->> WRONG <<---<'
020C 2D 2D
020E 2D 3E
0210 3E 20
0212 57 52
0214 4F 4E
0216 47 20
0218 3C 3C
021A 2D 2D
021C 2D 3C
021E 04                         FCB     4
                        *
                        ******
                        *VARIABLE RAM AREA
                        *
021F                    TRKNUM  RMB     1
0220                    DRVNMB  RMB     1
0221                    FLAG    RMB     1
0222                    COUNT   RMB     1
                        *
0223                    FCB     EQU     *
0223                    FUNCTN  RMB     1
0224                    ERRSTT  RMB     1
0225                    ACTSTT  RMB     1
0226                    FILSPC  EQU     *
0226                    DRVNUM  RMB     1
0227                    FILNAM  RMB     8
022F                    EXTNSN  RMB     3
0232                            RMB     177
02E2                    FCBEND  EQU     *-1
                        *
                                END     PROGRM
```

NO ERROR(S) DETECTED

SYMBOL TABLE:

```
AC1A   8004   ACTSTT 0225   ALPHA  012B   ALTRNT 019B   CHECK  017C
CLRLUP 0106   CMDTBL 01F6   CMDTST 012E   CNTLUP 01A6   CNTMAX 001E
COUNT  0222   DATA   8005   DONE   019A   DONE2  01D0   DRVNMB 0220
DRVNUM 0226   DRVSEL 7F0C   ERMSG  0208   ERROR  0170   ERRSTT 0224
EXTNSN 022F   FCB    0223   FCBEND 02E2   FILNAM 0227   FILSPC 0226
FLAG   0221   FLOLUP 019E   FUNCTN 0223   GETBIN 01D1   GETCHR 710F
GETCMD 010E   NOFLAG 01B6   NOKEY  01F4   NOTBIN 01DE   OKAY   01E0
PROGRM 0100   PROMPT 0205   PSTRNG 711B   PUTCHR 7112   QUIT   0177
RDRF   0001   READ   7F00   RESTRE 0142   RSTORE 7F09   RUNCMD 013C
SECNUM 0004   SETTRK 0152   SPCTST 01E2   STATUS 8004   TBLEND 0202
TRKNUM 021F   WARMS  7103
```

```
S1130100BE00FFCE021E0B6F008C02E226FBCE029B
S113011005BD7118BD710FB47F813025F181J42480
S1130120AB0308702268702202DE3CE01F6A100F0
S113013027OABC020227B708080820F2EE01AD0036
S1130140220CC7F021FCE0223BD7F0CCE0223BD7FB5
S1130150093863BD7112BD01D125141ABD01D1E9
S1130160250E1315B5B5B1B8128204B7021F391D
S1130170CE020BBD7110391317E7103BD01E22508
S1130180190CE0223BD7F0CCE0223B6021FC6043DC4
S1130190700B6022087022620E2397F0221732D3
S11301A021B61EB70222CE0223BD7F0CB6007D026B
S11301B0212703B6021FC604CE0223BD7F00B6026B
S11301C020B70226BD01E225077A02222BD820CED6
S11301D039BD710FB47F8030250481QA25020D39D1
S11301E00C39B6004B501270BB6005B47FB120F5
S11301F024020D390C395201425401524301704103
S113020001985101774454203E20043E2D2D2D3E5B
S1120210JE2057524F4E47203C3C2D2D2D3C049189
+++
```

June 15, 1979

MAIL LIST

'68 Micro Journal
3018 Hamill Road
Hixson, Tennessee 37343

Gentlemen:

It really started as a simple project, but since then has really grown into Mass Confusion.

"A simple mail list program.", is what he said.

Now its's, "Send a letter (which letter?) to certain ZIP codes or those in Category 324!!". It's really amazing how confused it has become.

Oh yes, "It's really like a letter only we call it a Trans-O-Gram".

Here is the problem. To get the most people on a mail list we need to keep the string length small. To write a letter we need to keep the string length long. HOW TO COMBINE THE TWO FILES? This package does just that!

Basically, we select the message to send - poke it into RAM along with a printer driving routine (via decimal!). Then we Chain in another program with the short strings and have a go at printing the message to all those lucky people who will receive our JUNK MAIL!

If you are interested I'll be pleased to make comments on some of the more interesting aspects of the two programs.

Good work on the Journal.

Very truly yours,

Gene Embry

Gene Embry
Route 1
Box 151 B-1-A
Morrisville, N. C. 27560

```
LIST

0001 : POKE.GRM
0002 :
0003 : VERSION 2
0004 :
0005 : GENE EMBRY  6/30/79
0006 :
0008 : THIS IS TRICKY!
0009 :
0010 LET A=268::COMPUTERWARE VER. 7.0 & 8.0
0012 LET B=PEEK(A)
0014 IF.B=88 THEN 30:: THIS IS $58
```

```
0016 IF B<>104 THEN A=A+1:GOTO 12::104 = $68
0018 IF B=104 THEN B=88:POKE(A,B):RUN
0030 STRING= 82
0032 HOME
0099 :
0100 : POKE MACHINE PGM. INTO RAM
0101 :
0110 LET A=22528::START OF RESERVED SPACE = $5800
0122 READ B
0130 IF B<0 THEN 200
0140 POKE( A,B)
0145 LET A=A+1
0150 GOTO 122
0160 DATA 206,88,42,134,32,198,12
0162 DATA 141,20,90,93,38,250
0164 DATA 166,0,129,26,39,9
0166 DATA 141,8,8,129,10,39,233,32,241,57
0168 DATA 55,246,128,8,87,87,36,249,183,128,9
0170 DATA 51,57
0172 DATA -1
0199 :
0200 : WHICH TRANS-O-GRAM TO SEND
0201 :
0210 INPUT "WHICH TRANS-O-GRAM SHALL WE SEND ",N
0220 IF N>10 P."MUST BE LESS THAN 10.":GOTO 210
0230 IF N<1 P."MUST BE BETWEEN 1 AND 10.":GOTO 210
0240 LET A$="TRANS."
0242 LET N$=STR$(N)
0244 LET A$=A$+N$
0250 IF FCHK A$=0 THEN 300::IT EXISTS
0260 PRINT N;"TRANS-O-GRAM HASN'T BEEN WRITTEN."
0270 INPUT "WANT TO CONTINUE (Y/N) ",Q$
0272 IF Q$<>"Y" THEN END
0274 HOME
0280 GOTO 200
0299 :
0300 : GET IT
0301 :
0310 DLM=ON ::PERMIT COMMAS - VER. 8.0 ONLY
0320 OPEN #10,A$
0330 GOSUB 1000::STICK IT
0340 DLM=OFF
0399 :
0900 :
0990 CHAIN TRANS2.PRT
0999 :
1000 : HAVE A FEW GOOD POKES
1001 :
1003 PRINT
1005 PRINT "THE TRANS-O-GRAM WE ARE ABOUT TO SEND."
1009 :
1010 : REMEMBER 'A' STILL POINTS TO THE NEXT AVAILABLE LOCATION.
1011 :
1020 FOR Y=1 TO 17::MAX. # OF LINES
1030 SET RECNO#10=Y:GET#10,C$
1032 IF C$="DONE" THEN 1080
1038 PRINT C$
1040 FOR X=1 TO LEN(C$)
1042 LET D$=MID$(C$,X,1):D=ASC(D$)
1044 POKE( A,D):A=A+1
```

```
1046 NEXT X
1050 GOSUB 3000::CRLF
1060 NEXT Y
1080 POKE( A,26)::END OF LETTER = $1A =CONTRL Z
1090 RETURN
1099 :
2999 :
3000 : ADD CR & LF
3001 :
3010 POKE( A,13)
3020 POKE( A+1,10)
3030 LET A=A+2
3090 RETURN
3099 :
LIST

0001 : TRANS2.PRT
0002 :
0003 : GENE EMBRY  6/30/79
0004 :
0010 STRING= 24
0012 LET T=2
0014 LINE= 0
0016 HOME
0018 PRINT "THIS PRINTS A TRANS-O-GRAM."
0020 OPEN #1,1:SWAP.DAT
0022 READ #1,N1,N2,N3,N4,N5,N6,N7,N8,N9,J$,K$,L$
0024 CLOSE #1
0030 OPEN #10,1:MAIL.DAT
0039 :
0040 : SET UP LOCATION $28 AND $29 FOR THE MACHINE PGM.
0041 :
0042 LET Y=40:X=88::$58 = 88
0044 POKE( Y,X)
0046 LET X=0
0048 POKE( Y+1,X):: $0 = 0 (RIGHT ?)
0050 LET J$="EMBRY'S FUNNY SOFTWARE"
0052 LET K$=" CO."
0054 LET L$="ROUTE 1  BOX 151 B-1-A"
0056 LET M$="MORRISVILLE, N.C. 27560"
0070 PRINT "DON'T FORGET TO SET THE 'TAB' ON THE PRINTER (17 SPACES)."
0080 INPUT "WHEN PRINTER IS READY PRESS 'RETURN' ",Q$
0099 :
0100 : WHO SHALL GET THIS MESSAGE
0101 :
0110 PRINT "THERE ARE ";N3;"PEOPLE ON THE MAIL LIST."
0112 PRINT
0120 PRINT "YOU CAN ELECT TO:"
0122 PRINT TAB(5);"SEND THE MESSAGE TO ALL"
0124 PRINT TAB(5);"TO ONLY CERTAIN ZIP CODES"
0126 PRINT TAB(5);"TO ONLY CERTAIN CATEGORIES."
0128 WAIT 3
0130 GOSUB 4000::SELECTION CHART
0199 :
0200 : MAIN
0201 :
0205 PRINT "WORKING IN RECORD # ";
0210 FOR X=1 TO N3
0212 PRINT X;
0214 SET RECNO#10=X:GOSUB 8000
```

```
0220 IF A$="" THEN 280
0222 IF F=1 THEN 270::EVERYONE GETS IT
0230 IF F1=1 IF A<A1 THEN 280
0232 IF F1=1 IF A>A2 THEN 280
0240 IF F2=1 IF B<B1 THEN 280
0242 IF F2=1 IF B>B2 THEN 280
0270 GOSUB 1000::FROM:
0274 GOSUB 2000::MESSAGE
0276 GOSUB 3000::TO:
0278 SKIP #T,5::GET READ FOR NEXT MESSAGE
0280 NEXT X
0290 CLOSE #10
0299 :
0300 : RESTORE BASIC
0301 :
0310 LET A=268
0320 LET B=PEEK(A)
0330 IF B<>88 THEN A=A+1:GOTO 320
0340 IF B=88 THEN B=104:POKE(A,B)
0900 :
0990 END
0999 :
1000 : FROM
1001 :
1010 LET W=12
1012 PRINT #T
1020 PRINT #T,TAB(W);J$;K$
1030 PRINT #T,TAB(W);L$
1040 PRINT #T,TAB(W);M$
1050 SKIP #T,4
1090 RETURN
1099 :
2000 : PRINT MESSAGE
2001 :
2010 LET Z=USER(4)
2090 RETURN
2099 :
3000 : TO WHOM
3001 :
3010 PRINT #T
3020 LET W=48
3030 PRINT #T,TAB(W);A$
3040 PRINT #T,TAB(W);B$
3050 IF C$="0" THEN 3070
3052 IF C$="O" THEN 3070
3054 IF C$="" THEN 3070
3060 PRINT #T,TAB(W);C$
3070 PRINT #T,TAB(W);D$;"    ";A
3080 : PRINT #T,CHR$(12)::FOR PRINTERS HAVING 'TOF'
3082 : IF NO TOF THEN MUST COUNT LINES
3090 RETURN
3099 :
4000 : MAKE UP SELECION CHART
4001 :
4010 HOME
4020 INPUT "SEND TO EVERYONE (Y/N) ",Q$
4022 IF Q$="Y" THEN F=1:GOTO 4090
4030 INPUT "SEND TO CERTAIN 'ZIP CODES' (Y/N) ",Q$
4032 IF Q$="N" THEN F1=0:GOTO 4040
4033 LET F1=1
```

```
4034 INPUT "ENTER MINIMUM 'ZIP' TO GET MESSAGE ",A1
4036 INPUT "ENTER MAXIMUM 'ZIP' TO GET MESSAGE ",A2
4038 IF A1>A2 P."RE-ENTER!":GOTO 4034
4040 INPUT "SELECT BY CATEGORIES TO GET MESSAGE (Y/N) ",Q$
4042 IF Q$="N" THEN F2=0:GOTO 4090
4043 LET F2=1
4044 INPUT "MINIMUM CATEGORY # TO GET MESSAGE ",B1
4046 INPUT "MAXIMUM CATEGORY # TO GET MESSAGE ",B2
4090 RETURN
4099 :
9000 : GET
9001 :
9010 GET #10,A$,B$,C$,D$,A,E$,B
9090 RETURN
9099 :
```

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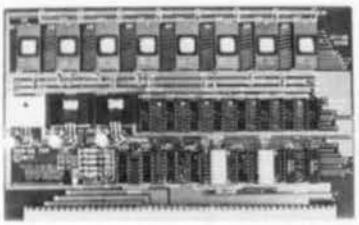

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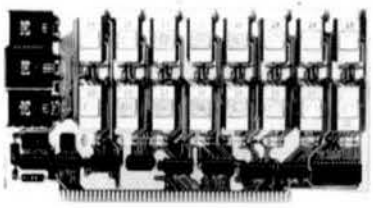

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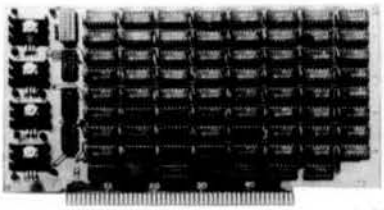

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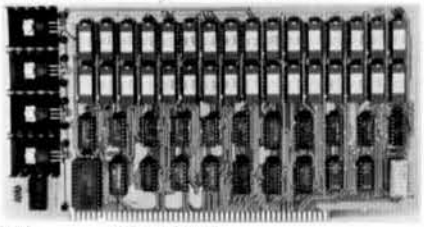

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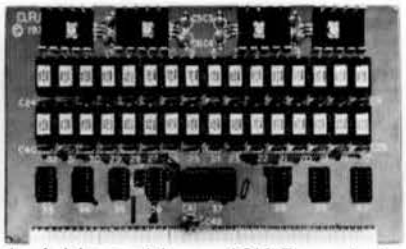

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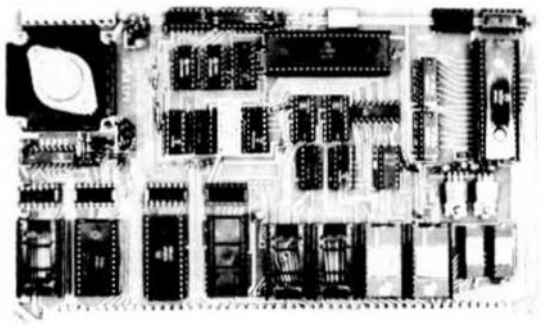

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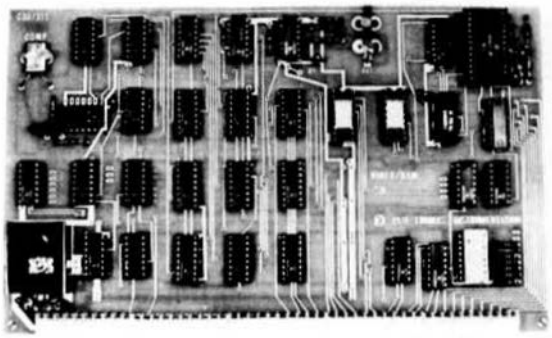

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